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ABSTRACT

This study attempted to assess whether a teacher inservice program would effect a change in teacher attitude and in the amount of time reading was taught in social studies and science content areas. A total of 22 teachers representing kindergarten through fifth-grade levels voluntarily participated in five inservice sessions; 22 teachers in a school similar in population and program offerings served as a comparison group. Overall objectives of the inservice training were to develop teachers' understanding of the advantages of teaching reading in the content areas, to develop positive teacher attitudes, to extend the amount of time that reading was taught in the content areas, and to develop activities useful for teaching reading in those areas. A 16-item attitude survey was administered to all participants before and after participation. Findings showed positive changes in teacher attitude; these changes were educationally important and statistically significant. Perceptions of training were nearly the same in both groups. Teaching time increased for the group receiving inservice training but remained nearly constant for the comparison group. Appendices provide worksheets and activity sheets developed for a third-grade science unit and a fourth-grade social studies unit, a bibliography for students, a list of teacher resource books, various materials used in inservice presentations, and participant-made materials. (Author/RH)

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PROFESSIONAL DEVELOPMENT OF TEACHING READING SKILLS IN THE CONTENT AREAS: PROGRAM AND EFFECT IN THE ELEMENTARY SCHOOL SETTING

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Abstract

A study investigating inservice training for teaching reading in the content areas of social studies and science. The study primarily views attitudes toward teaching reading in these areas.

Twenty-two teachers representing kindergarten through fifth grade levels voluntarily participated in five inservice sessions. Twenty-two teachers in a school similar in population and program offerings served as a comparison group.

A sixteen-item attitude survey was administered to all participants as a pre and post test instrument. Means, standard deviations, and t-tests were calculated and compared. Data were analyzed in three areas: 1) teacher attitude, 2) teacher perception of training effectiveness, and 3) time elements of teaching reading in the content areas.

Data show positive changes in teacher attitude were educationally important and statistically significant at the .05 level. Perception of training was nearly the same in both groups. Teaching time increased for the inserviced group, but remained nearly constant for the comparison group.

Appendices include units and activities developed in/for inservice sessions, bibliographies for students and teachers, resources, and survey forms.

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Table of Contents

Chapter Page

1. Introduction 1
2. Related Research 6
3. Design and Procedure 16
4. Findings of the Study 23
5. Summary, Conclusions, and Recommendations 28

References 32
Appendix A--Science Unit 37
Appendix B--Social Studies Unit 45
Bibliography for students 70
Bibliography for teachers 73
Appendix C--Teacher Resource Books 74
Appendix D--Attitude Survey 77
Evaluation forms 78
Inservice presentation activities 79
Inservice participants' activities 88

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Chapter 1

INTRODUCTION

Within this chapter are presented the background of the study, statement of the problem, hypotheses, definition of terms, limitations of the study, and assumptions of the study.

Background of the Study

Competence in reading comprehension is necessary in today's fast-paced technical world. Recent demands of the legislature and of the public to upgrade content area learning elevate it to a primary concern of educators.

Pupils' reading comprehension achievement is hampered by many factors. Curriculum demands increase constantly. Texts have higher readability and specialized vocabulary. The multitude of programs and scheduling difficulties result in inadequate time for adequate teaching. Differing abilities of students, and teacher attitudes contribute further to confound success in reading.

Children who exhibit high achievement in the reading program frequently have difficulty reading in content areas. Karlin (1971) suggests the following reasons. In the primary grades pupils do narrative reading to learn how to read. The emphasis is on reading skills and practice. The intermediate grades concentrate on refining skills using more difficult materials and stressing main ideas, and reading for detail. Informational materials, such as those used in the content areas, require different reading skills and different purposes.

The content area teacher must develop students' specialized reading skills in the content areas where most reading is required. Pupils must be taught how to learn through reading, unlike learning in the basal program where the major emphasis is on reading skills per se.

Learning to read is a life-long process with the formal educational objectives of helping students become learners as well as learned. Process is more important than the product (Estes & Vaughan, 1978). Many teachers resist change and become inflexible in their methodology resulting in product rather than process teaching.

Teachers need to understand the close relationship between reading comprehension and content area instruction. They need to know what to teach, how to teach, and how to maximize student learning (Estes et al., 1978). The ability to learn is strongly tied to the ability to read.

The purpose of this study was to investigate the relationship between an inservice training program of social studies and science reading skills, teacher attitude, and the amount of time that reading was taught in those content areas.

Statement of the Problem

This study attempted to answer the question: Would a teacher inservice program affect a change in teacher attitude and in the amount of time that reading was taught in the content areas?

Need for the Study

A close relationship exists between reading comprehension and content area instruction. Many factors are complicating the difficulties faced by children as they read in content area texts. An awareness of the myriad of problems faced by children is necessary if teachers are to actively facilitate more effective content area instruction. Research has established the relationship between inservice training and more positive teacher attitudes. This research has not conclusively verified this training/attitude link. Neither has research verified a relationship between inservice training and teacher behavior. Finally, no research has been found describing instructional time in the content areas.

Therefore, mindful of these contradictory findings among studies on teacher attitude and the paucity of empirically based investigations on reading instructional skills in the content areas, the present study was undertaken. This study was an important step toward clarification of lack of unanimity among existing studies, and illumination of a knowledge base where none existed.

Hypotheses

The primary hypothesis of this study was that teachers receiving inservice training in teaching reading in the content areas would have a more positive attitude toward teaching reading skills in conjunction with content than would those teachers who did not receive such training.

It was further hypothesized that those teachers who received inservice training would spend more time teaching reading in the content areas.

Definition of Terms

For the purposes of this study the definitions of key terms were as follows:

Teachers: Instructors who taught at the participating schools.

Content area classes: Social studies and science classes at the participating schools instructed by the participating teachers.

Inservice: Survey completion and participation in the teacher training program designed for this study.

Attitude: Teachers' passive inclination to accept or reject statements appearing on the attitude survey.

Reading: The process of using decoding skills in vocabulary development, comprehension, critical reading, and study skills for the development of meaningful concepts.

Content area reading: Use of teaching reading skills concurrently with teaching social studies and science, and making adequate provisions in instruction when the reading task interferes with the learning task (paraphrased, Estes & Vaughan, 1978).

Limitations of the Study

This study was limited in the following ways:

1. The population of the study was limited to

teachers who voluntarily participated at the participating schools.

2. The inservice participants taught in one school.
3. The content areas included social studies and science.
4. The attitude survey was subjective.

Assumptions of the Study

The following statements were assumptions of this study:

1. The attitude survey was a reliable measure.
2. Teachers responded truthfully, and the attitude survey results reflected their true feelings.
3. Observations of the amount of time spent teaching reading were accurate.
4. The inservice objectives met the needs of the study.
5. Teachers were representative of the population of both schools.

Chapter 2

RELATED RESEARCH

Representative research related to the study's topic will be discussed. Major emphasis will focus on the following: demands of content area reading, developmental and functional reading, process or product learning, program needs, the choice of an inservice leader, teacher attitude and behavior, positive teacher attitude changes, and conflicting research.

Demands of Content Area Reading

Nearly all content area reading instruction focuses on middle or high school students, with the implication that elementary students do not encounter difficult reading materials while studying subject matter. Moore, Readence, and Rickelman (1983) explain that this emphasis evolved when the connection between secondary level remedial reading instruction and content area reading instruction were faced with the necessity of skills transfer across disciplines. Even though the majority of early writings in the field of content area reading dealt with elementary levels, research and curriculum development from the middle of the century to the present has neglected elementary level children, ignoring the fact that they need attention.

In his classic study Thorndike concluded that, "Perhaps it is in their outside reading of stories and in their study of geography, history, and the like, that many school children really learn to read" (p. 282). Gray (1919) popularized the content area slogan, "Every teacher a teacher of reading." Horn (1937) emphasized wide reading within subject areas, and accomodation of individual differences for enhancement of meaningful learning (cited in Moore et. al., 1983).

The diversity of reading ability in each classroom demands diagnosis of individual student's abilities (Colligan, 1978). Effective comprehension, particularly in content areas, depends on diagnostic and instructional strategies. This instructional need is underscored by the fact that up to 50 per cent of upper-grade students cannot read their textbooks (Estes & Vaughan, 1978).

The ability to learn is strongly tied to reading ability. The four stages of a model of reading by Adler and Van Doren must be recognized on the developmental scale, and adjusted accordingly for reading in the content areas. These four stages progress from reading readiness, to beginning reading, through elementary reading, and culminate with reading maturity.

Estes and Vaughan (1978) state that teachers must structure the environment of content area classes. Pupils would then learn both in light of their abilities and in spite of their problems with reading. They would simultaneously develop skills and understanding necessary to their functioning as literate persons in a literate society. Colligan (1978) stated that the reading process and the instruction in the process must be accepted as an essential part of learning and integrated into the total school curriculum.

Developmental and Functional Reading

Wilson (1958) found that teachers should be aware of the problems presented pupils by content field materials. He emphasized that teachers must direct their efforts toward helping students interpret textual materials. This awareness, by necessity, precedes teacher change.

The nature and purposes of the basal program and the content areas vary significantly in ways that have major impact upon instructional practices. Teachers must be shown how to deal with the large number of concepts found in content area texts and objectives. These concepts are introduced rapidly. The student must relate constantly what he reads to previous experience and knowledge (Criscuolo, 1973).

Further, content fields have a heavy load of specialized vocabulary. McDonald (1968) studied essential or important vocabulary for content fields of math, science, and social studies in intermediate grades. He identified 489 essential, and 135 important words in the social studies and science fields.

Additionally, students must contend with terse writing and the small amounts of descriptive matter found in the content areas. Where pupil understanding and retention is expected, and especially where mastery of relationships is more difficult, study skills for skill development and mastery of learning must be taught. Gurrola (1975) attempted to determine if a combination of certain parts of the SQ3R study method could produce results equal to results obtained when the entire SQ3R method was used. Finding no significant gains, he recommended inservice training or faculty development seminars facilitating content area teachers gaining knowledge of SQ3R. This would enable teachers to demonstrate this method for pupil use.

Inservice training becomes a useful vehicle for meeting the above objectives. The complexity of content area reading tasks mandates that the teacher realize the importance of adapting instruction to individual student's needs.

Process or Product Learning

Teachers who complain that their pupils cannot read usually mean that the students have not comprehended what they decoded. Research since 1920 has been critical of the still-used practice of reading aloud. Good word calling leads teachers to believe that students can comprehend and apply what they have read (Thelen, 1976).

Often teachers have never been made aware of how to teach content and process at the same time (Thelen, 1976). Herber (1970) has called this the "assumptive" teacher.

Recitation is done, and assignments are given with the expectation that students have the necessary skills and background knowledge, and experiences for learning. Assumptive teaching must be avoided. Kaltsounis (1961) rejected his hypothesis that third graders already knew more than half of their social studies cognitive content.

In most pre-service professional education programs, no training is given in content area instruction. It becomes the teacher's responsibility, therefore, to rectify, compensate, or suffer with the problem (Estes & Vaughan, 1978). Coe (1969) expected that teachers who took a hard look at their own instructional practices on a low-pressure basis would revise their teaching procedures. All of the teachers studied in his research moved significantly from "direct" and "control oriented" styles to "indirect" and "motivationally oriented" styles. Coe's findings lead one to believe that perhaps teachers would change techniques if shown how.

Program Needs

Cunningham, Arthur, and Cunningham (1977) cite as fact that many elementary teachers are unhappy about the instructional programs they follow, but have never been presented or taught different approaches, methods, or techniques. Colligan (1978) concurs as do Smith and Otto (1969). Smith and Otto further state that content area teachers not only lack training, but they lack insight into the reading process and the various reading and study skills applicable to their content field.

Steele and Laffey (1976) provide insight that the importance of inservice training is clear. Teachers must become personally involved with the reading task, and must be provided with time for preparation and evaluation of instructional materials. Training content area teachers in specific reading approaches is another good function of ongoing inservice workshops (Karlin, 1964).

Flanagan (1975) concluded that inservice training in the teaching of reading should be content-specific, competency based, and field-centered. With evidence of support within the school, inservice training for teachers can be a valuable tool for implementing change if teachers are actively involved, and if there is revision and reevaluation (Horn, 1982).

Choice of an Inservice Leader

Lack of agreement exists about the choice of inservice training leaders. Some literature suggests that the most efficient inservice model for change is one which uses a consultant already employed by the school district, rather than one which brings in an outside visiting "expert" (Dupuis & Askov, 1978). On the other hand, Cochran (1978), Karlin, (1964) and Nichols (1979 state that bringing in outside consultants or specialists to meet with the teachers may be highly effective (cited in Horn, 1982).

DeCarlo (1967) found that an inservice program can help teachers develop a positive attitude toward reading supervision when competent leadership which teachers need is offered. When such competent leadership is provided, inservice training extends the practice of new techniques, provides answers to immediate questions, and provides appraisal for more effective teaching.

Teacher Attitude and Behavior

The effect of inservice training on teachers' attitudes and behavior has been the focus of many investigations. Attitude testing revealed that teachers had a better understanding of the relationship between the teaching of reading skills and the student's ability to grasp the textual material in the content areas (Steele & Laffey, 1976). Evaluation of materials such as study guides, structured overviews, skills-teaching formats, and vocabulary extension programs indicated a high level of satisfaction with their use.

Brandow (1964) reported that activities developed during inservice training were used with significant increase in over half of the classrooms participating in his study. McGuire (1971) designed a workshop model to examine the potential for changing both teacher attitude and behavior. The workshop model appeared to increase knowledge and use of effective teaching strategies and methods. In her field-based study, Rabin (1978) compared two approaches--an inservice workshop and independent materials, and the same workshop and materials with individualized follow-up assistance. Although all attitudes improved, the researcher reported that little behavior change was evidenced.

The importance of inservice training on teacher attitude was further substantiated by an additional study. Overline (1972) confirmed his hypothesis that inservice training made a significant difference in teacher attitude. He suggested that attitudes may be predispositions to actions; the modification of attitudes cannot be presumed to auger actual behavior changes.

Positive Teacher Attitude Changes

Few inservice programs addressed the change of attitude toward content area reading. While none were found that studied elementary teachers' attitudes toward content area reading, Dupuis and Askov (1979) completed a project at the junior high school level. They stated the critical first step in changing behavior is changing teacher attitudes. When the specific inservice goal is to help teachers integrate reading instruction into content area teaching, negative teacher attitudes provide a serious obstacle. Their data indicated significant attitude changes toward integrating reading skills into content area teaching. Changes were reflected in classroom practice; teachers incorporated reading instruction to a greater extent after the inservice.

Inservice training has been found to have both short-term and long-term influence on teacher attitude. Teachers involved in the Dupuis and Askov study were tested one year later after completion of inservice training. The results showed that inservice education can make a difference in bringing about lasting positive changes in teacher attitudes and knowledge of reading skills (Dupuis & Askov, 1980).

Marino (1976) examined elementary teachers' attitudes toward children. Inservice, with Glasser's emphasis on self-esteem in the classroom, developed more positive, more open-minded teachers sensitized to children's needs.

Haynes (1969) designed an inservice component to assist teachers in understanding, motivating, and working effectively with slow learners. He noted that while attitudes can be changed significantly through inservice, this change is unrelated to age, years of teaching experience, and marital status. The change, however, is related to professional growth through inservice training and professional work toward advanced degrees.

In his study of content attributes, Taylor (1965) reported positive teacher attitudes contributed eighteen per cent in the variance in predicted pupil achievement. Dean (1968) found favorable changes in attitude and cognitive development; Goldstein (1970) found significant differences in all attitudinal areas tested. Stanley (1969) concluded the amount of positive directional change was significant in his study.

Conflicting Research

While the impact of inservice training has been found to be positively related to teacher attitude and behavior, there are empirical investigations that have failed to verify this relationship. In Sussex County, New Jersey, for example, content area reading had been written off as an ineffective investment when teachers failed to use their summer workshop training. In order to rectify this nonproductive inservice training, it must include strategies that translate learning to practice in particular classrooms (Stein, 1981).

Lindberg (1969) likewise found no significant difference in attitude scores after inservice training in science, although 93 per cent of the participating teachers believed that their attitudes had changed favorably. Lindberg concluded that teachers already had favorable attitudes toward teaching reading in science.

Tilley's (1971) descriptive study stated that, historically, inservice training has been an ineffective means of implementing educational changes. In the past few years, modification and individualization has created an effective tool for change.

Summary

The majority of research indicates that inservice training can change teacher attitude positively. Evidence is not as strong toward changes in teacher behavior through inservice. No research was available concerning the amount of time teachers spent teaching reading skills in the content areas. Lack of research at the elementary level clearly points to the necessity for further research in this area.

Chapter 3

DESIGN AND PROCEDURES

This chapter will describe the participants involved in the study, the design and procedures followed, a description of the attitude survey, and an explanation of the data analyses.

Participants

This study involved forty-four teachers. Twenty-two teachers from one elementary school voluntarily attended five inservice training sessions designed for this study. These teachers represented all grade levels, kindergarten through fifth grade, and special area teachers. There were two kindergarten teachers, four first grade teachers, one second grade teacher, four third grade teachers, and two fifth grade teachers. The five teachers from special areas included a primary specialist, a media specialist, a music teacher, and two Chapter 1 teachers.

A school similar in population and program offerings was chosen as the comparison school. Twenty-two teachers were selected to participate. These, too, volunteered.

Design and Procedures

The study included an attitude survey and an inservice program for teachers. The overall objectives of the inservice training were to develop teachers' understanding of the advantages of teaching reading in the content areas; to develop positive teacher attitudes; to extend the amount of time that reading was taught in the content areas; and to develop activities useful for teaching reading in the content areas.

All activities and scheduling had prior approval by the county-level staff development personnel. Additional approval was given at the building level by the principal and the curriculum coordinators.

All inservice sessions were held at the participating school for periods of one hour, from 8 a.m. to 9 a.m., before the school day commenced. All participants attended 100 per cent of the time.

The researchor attempted to provide experiences and activities to meet the following specific objectives:

Participants would acquire competencies to:

1. Determine readability of content area texts through the Fry Graph.
2. Determine suitability of the level of material through cloze procedures.
3. Investigate the comprehension/readability range of students by reading test scores, reading placement, and teacher observation.
4. Identify the major concepts and the learning strategies in a unit of study, and develop pre-teaching techniques through semantic mapping, translation of objectives from teacher's manuals into identification of

major concepts, structured overviews, study guides, and a directed reading-thinking activity.

5. Determine specific reading skills to be taught through classroom observation, reading post-tests, standardized tests, and student conferences.
6. Design an activity or method to use with a social studies or science unit; determine the important vocabulary and design a method or activity for implementing learning; include literal, inferential, and evaluative questions in a comprehension method or activity; design a study skill activity using SQ3R, PQRST, or a study guide; and determine supplementary materials available.
7. Recognize the necessity of a multi-level approach and design appropriate strategies for their respective content area.
8. Increase interest in reading as a tool for learning, and as a source for enrichment and pleasure.
9. Complete a pre- and post-inservice attitude survey.

The first session was conducted on October 25, 1983. The pre-inservice attitude survey, "What do you think?," was administered at both the inservice and at the comparison school. An overview of content area reading was presented by the researcher, and objectives were discussed during the inservice training.

At the second session, October 17, 1983, instruction was given in purposes and uses of the Fry graph and cloze procedures. Participants implemented the use of both. Assignments in completing Fry graph and cloze procedures for determining grade level suitability of social studies and science textbooks were given.

On November 1, 1983, the session topic was identifying major concepts and techniques. Activities included a directed reading-thinking activity and vocabulary techniques and activities. Semantic mapping and structured overviews were presented as means for identification of major concepts.

Comprehension techniques and study skill techniques were viewed at the November 3, 1983 session. Participants were given assignments to complete before the final session on March 6, 1984. Assignments included preparation of a directed reading-thinking activity; vocabulary, study skills, and comprehension activities; and a student or teacher bibliography (optional).

Resource materials for this inservice training were available for all participants at the inservice school. Resources included materials and activities designed for a third-grade science unit (Appendix A), materials and activities suitable for a social studies unit on maps and globes (Appendix B), and resource books available for teachers to check out (Appendix C). The researcher was also available for consultation.

The final inservice was held on March 6, 1984. The inservice participants brought their completed activities to share. Evaluation forms were completed (Appendix D). Both the participating inservice school and the comparison school completed the post-inservice attitude survey, "What do you think?" (Appendix D).

Instrumentation

The instrument chosen for the attitude survey was adapted from Estes and Vaughan (1978, pp. 9-10). Because the original instrument was designed for use with secondary teachers, changes were necessary. For example, in question six, the word "secondary" was deleted. The original question read, "Coursework in how to teach reading in content areas should be required for secondary teaching certification." Question seven was deleted: "Only English teachers should be responsible for teaching reading in secondary schools." Substituted for number seven: Reading skills need to be taught at the elementary level during reading groups only.

The remainder of the survey was used in its entirety. The instrument contained sixteen questions--eleven positive and five negative. Respondents were asked to choose one of the following responses to an item statement: strongly agree, tend to agree, undecided, tend to disagree, disagree, or strongly disagree. Respondents were instructed to answer independently, honestly, to fill in only one answer and to leave no blanks.

Included on the questionnaire was a final area for respondents to estimate how much time per week they spent teaching reading in the content areas of social studies and science. This question was analyzed separately. Five blanks were included for responses. The options to be checked ranged across five time periods. These options were the following: (1) none, (2) less than 15 minutes, (3) 15 to 30 minutes, (4) 30 to 45 minutes, and (5) more than 45 minutes.

It was felt appropriate to assess teacher's self-perception of competency to teach reading in the content areas. Question 16 on the questionnaire was added by this researcher. It read: I am well trained and prepared to teach reading in the content areas. Since it dealt with self concept rather than attitude, it was analyzed separately also.

Interpretation

The items on the attitude survey were identified as positive or negative. A priori weights of one integer difference in descending order were assigned in responses to positive items, and in ascending order to responses of negative items.

Using questions one through fifteen, each score was totaled. Means and standard deviations were calculated on both pre- and post-inservice instruments. Pre- and post-test scores were compared using a t-test. Question 16 was treated separately in this same manner.

The final portion which described time spent teaching reading, was analyzed using a comparison of medians for pre- and post-tests.

Chapter 4

FINDING OF THE STUDY

The purpose of this study was to investigate the effect of teacher inservice toward attitude and the amount of time reading was taught in elementary social studies and science content areas.

An inservice component was developed and conducted at the participating school. All participating teachers volunteered. The inservice was evaluated by each participant. Each participant completed a form listing three competencies gained from attendance. Attitude surveys were completed at the inservice school and at the comparison school for the purpose of pre- and post-inservice comparisons.

Data were analyzed in three areas: 1) teacher attitude, 2) teacher perception of training effectiveness, and 3) time elements of teaching reading in the content areas.

Teacher Attitude

The inservice group was comprised of twenty-two teachers who participated 100 per cent of the time. The comparison group began with a like number, but only twenty completed the post-attitude survey. Table 1, Attitude Survey Scores, illustrates each test score with a comparison of means and the standard deviations. The inservice group had a pre-test mean of 68.27, and a standard deviation of 7.6; the post-test mean was 72 with a standard deviation of 7.2. The comparison group had a pre-test mean of 66.22 with a standard deviation of 9.3; and a post-test mean of 66.45 with a standard deviation of 8.1. The inservice group's four point increase of approximately one-half standard deviation is considered educationally important.

Table 1

Attitude Survey Scores

Inservice Teachers			Control Teachers		
No.	Pre	Post	No.	Pre	Post
01	69	58	31	62	67
02	69	58	32	67	67
03	72	72	33	50	65
04	56	75	34	64	72
05	63	68	35	71	75
06	68	77	36	75	71
07	63	76	37	79	66
08	72	86	38	66	75
09	79	78	39	65	66
10	69	80	40	57	57
11	72	76	41	73	79
12	73	80	42	66	57
13	66	69	43	72	71
14	73	75	44	73	56
15	86	63	45	66	63
16	76	76	46	80	86
17	78	73	47	63	61
18	72	73	48	56	65
19	59	63	49	56	57
20	73	79	50	56	-
21	60	70	51	57	57
22	66	67	52	70	-
Mean	68.27	72.00		66.22	66.45
S.D.	7.6	7.2		9.3	8.1
N*	22	22		23	20

The treatment and comparison groups volunteered, and, thus must be considered as a convenience rather than a random sample. Both groups were from like schools, with like programs. The comparison group matched the inservice group closely. Therefore, it was reasonable to consider the groups as random samples, and the t-test was calculated. The difference of the t-test between the means of the post-test was 2.34, which was statistically significant at the .05 level.

Teacher Perception of Training

Question sixteen on the attitude survey was treated separately since it dealt with teacher self perception, rather than attitude. Medians were calculated and compared for inservice and comparison groups.

In the inservice group fifteen teachers had the same perception of abilities, one changed negatively, and six changed positively; whereas, in the comparison group, sixteen remained unchanged, one changed negatively, three changed positively, and two did not complete the survey.

Teacher Perception of Training, Table 2 illustrates

Table 2

Teacher Perception of Training

	Inservice Group Post-Test						
Pre-test	0	1	2	3	4	5	6
0							
1		[illegible]					1
2					2		
3		1				2	
4					[illegible]		
5						[illegible]	1
6							[illegible]

	Control Group Post-Test						
Pre-test	0	1	2	3	4	5	6
0							
1							
2							
3							
4		1			[illegible]		
5						[illegible]	1
6							[illegible]

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teacher attitude changes. The inservice group had a median of 4.94 pre-inservice and 5.1 post-inservice. The comparison group's medians were 5.0 for both pre- and post-inservice. Although there was a slight gain in the inservice group, it was felt it was not significant. Table 2 illustrates that differences were marginal, with the perception of training being nearly the same in both groups.

Time Element

Medians were calculated for both groups. The inservice group's median increased from 3.2 for the pre-inservice survey to 3.93 for the post-inservice survey; whereas, the comparison group's median decreased from 3.17 to 3.0. Teaching Time in the Content Areas, Table 3, further illustrates this comparison.

Table 3

Teaching Time in Content Areas

Min./Wk.	None	-15	-30	-45	+45	Median
Inservice						
Pre	3	3	7	4	5	3.21
Post	2	3	3	7	7	3.93
Control						
Pre	9	0	3	3	7	3.17
Post	8	1	2	7	2	3.00

In the inservice group eleven teachers remained unchanged, eight indicated increased teaching time, and three indicated teaching time decreased. The comparison group had eight who remained unchanged, five who increased time, and seven who decreased teaching time.

Further analysis shows that more inservice teachers taught for longer times than those who did not receive inservice training. Twenty inservice teachers taught reading fifteen minutes or more; fourteen of these taught for 45 minutes or more; and two taught none. This can be contrasted with the comparison group where twelve taught fifteen minutes or more; nine of these taught 45 minutes or more; and eight taught none.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter includes the summary and conclusions of the study. Implications for staff development and recommendations are also discussed.

Summary

This study attempted to show that inservice training would have a positive effect on teaching reading in the content areas. It addressed teacher attitude as a necessary component of change, with inservice as the vehicle instrumental for change. An awareness of curriculum demands, difficulty of content area materials, and the ability to develop and match materials through a multi-level approach was effected through a five-month inservice training program.

Findings indicate the primary hypothesis to be proven as educationally important. The inservice teachers developed a more positive attitude toward teaching reading in the content areas to a statistically significant degree.

The secondary hypothesis, that teachers would spend more time teaching reading in content areas, appears valid. Eight inservice teachers increased time; only three comparison teachers increased time. Three inservice teachers decreased time; whereas seven comparison teachers decreased time.

Teachers' self perception of training remained basically unchanged. Most teachers perceived themselves to be well-trained.

Conclusions

Findings of this study concur with the findings of Dupuis and Askov (1979) that the first step to behavioral change is attitudinal change. Therefore, to affect positive change, a positive attitude must be developed. It was found that inservice training would do this.

Data analyses, coupled with teacher evaluations of the inservice training conducted for the purposes of this study, caused the following conclusions to be drawn:

1) It is desirable to stop assumptive teaching.
2) It is desirable to teach pupils how to study in the content areas using SQ3R, study guides, and teacher-made materials.
3) A multi-level approach using materials matched to the pupils' reading levels would assure success in content areas.
4) It is desirable to teach a process, rather than a product approach.

Implications for Staff Development

An awareness of problems presented by content area materials needs the directed effort of teachers if pupils are to overcome these problems that hinder effective learning. When teachers develop this awareness and acquire the necessary skills for teaching both content and process, they, in turn, can develop this same awareness within their students, teach application of skills, and facilitate necessary transfer of learning.

Teacher competency will be developed by the following: broadening background experiences where necessary, teaching specialized vocabulary, teaching and applying study skills, and using a multi-level approach to content area teaching. Ninety-five per cent of the inservice teachers felt the inservice methods and media were effective to a very high degree. The remaining five per cent responded that the training was effective to an above average degree. Ninety-one per cent felt the inservice met their needs to a very high degree, and nine per cent felt the need was met to an above average degree.

Recommendations

Reading is a thinking process. Reading skills are a necessary part of each content area. Few basal reading series teach transfer of skills from the narrative approach of the basal to the non-narrative content area materials. Pupils incur difficulties as early as first grade. Therefore, earlier use of content area reading is necessarily taught in today's society. Inservice in the content area field at the elementary level is elevated to a position of primary importance.

Basal readers should be scrutinized and evaluated for practical application of reading skills across disciplines, before adopting the readers for classroom use. Methods need to be developed, and time must be set aside for practice of learned skills in the content areas.

Since this was a pioneer study at the elementary level, future research is indicated. Pupil achievement was not addressed. Many teachers expressed concern for reading in the content area of math. Does changing teacher attitude alter pupil attitude and performance? Would use of a basal series strong in content area teaching and application positively affect pupil achievement? Therefore, replication of the study, with the following changes is desirable: 1) in other regions, 2) in other subject areas, 3) in other grades, and 4) with extended inservice components building on previously developed competencies.

Furthermore, it is recommended that professional development be assisted through the following: 1) integration of skills needs assessment with suitable inservice training, 2) recertification components of reading in the content areas structured to meet definite objectives, and 3) required courses in reading in the content areas for pre-service teachers before initial certification is granted.

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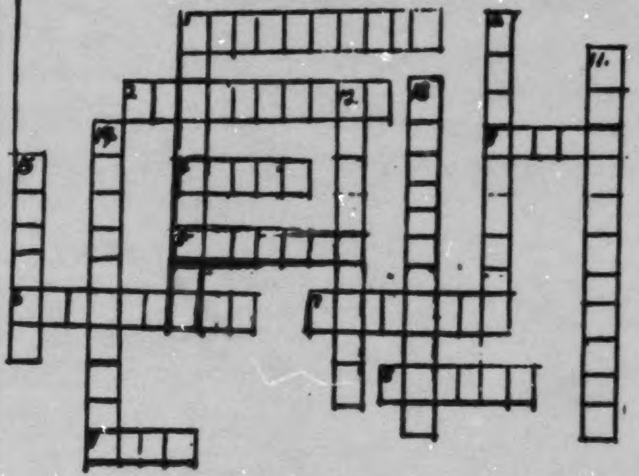
Appendix A

Science Unit

The following appendix includes worksheets and activities designed for a third grade science unit. Many teacher-made activities and folder games were developed for the purpose of this study. Most activities were self directed. The games were laminated with envelopes or pockets on the outside of the folder for convenient storage of game pieces. Wherever possible, questions and answers were color coded for ease of identification and for pupil motivation.

FIRST ORBIT

JOHN GLENN 1962



ACROSS

1. A type of airship used for space travel.
2. A person who works and travels in space.
3. The path a satellite makes when it moves around a bigger object.
4. A word meaning moon.
5. A rock formed from cooled magma underground and cooled lava on the Earth's surface.
6. Special tools and clothing needed by astronauts on the moon.
7. The movement of an object as it spins about itself.
8. A round hole in the moon's surface.
9. Large flat moon plains made of rocks and dust.

DOWN

I. An object that moves around a bigger object.
10. The movement of one object around another object.
11. A rock formed from other rocks which have been heated and squeezed together.
12. An instrument used to make faraway objects look better.
13. A rock formed from sediments left behind by wind and water.
14. Special storage packages for food and drink.
15. A word describing sharp moon rocks.

HALF VISIBLE MAN FROM A DISTANT HALF-MOON

You are planning a trip into outer space.

How many things do you need to take?

How many things would you like to take?

List them below.

NEED TO TAKE	WOULD LIKE TO TAKE

Problem solving, critical thinking, categorizing

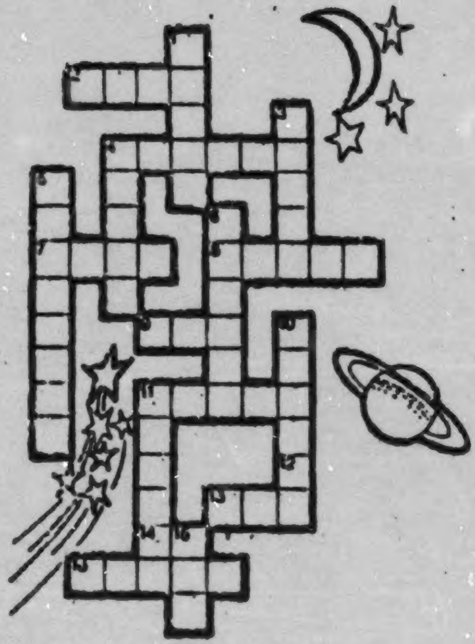
OUTER SPACE PUZZLER

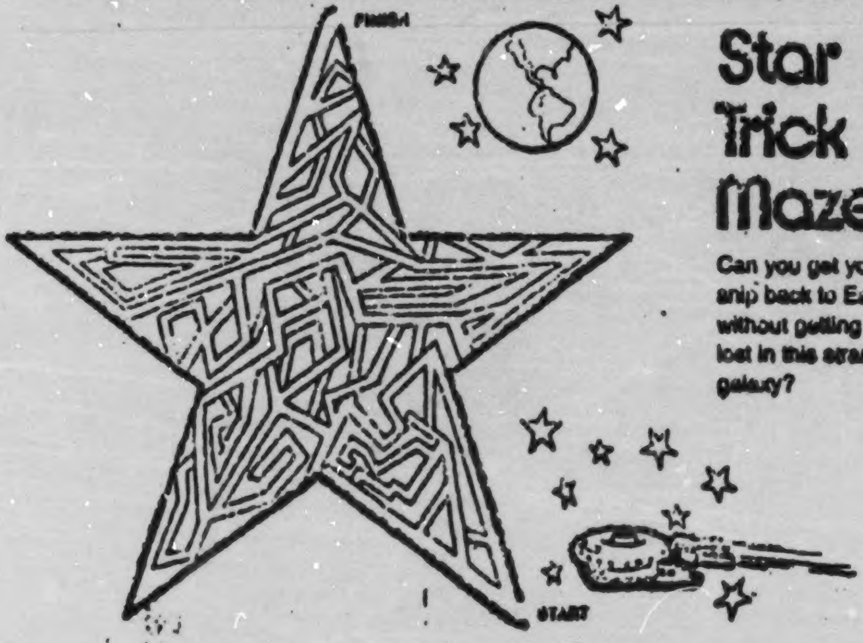
ACROSS:

2. A vehicle for space travel; a space________
4. A large missile.
7. A heavenly body that revolves around the earth.
8. A device that gives a narrow beam of intense light.
9. The central body of our solar system.
11. Gold is one.
12. Letter that stands for an unknown.
13. The space we see above the earth.
14. ___bit (path of the sun).
16. The third planet from the sun; our home.

DOWN:

1. Astronauts travel to outer ________
3. Heavenly bodies that can be seen on a clear night.
4. A machine that acts and looks like a human.
5. An electronic device used to solve problems quickly.
6. Saturn is one.
10. A huge group of stars in space; the Milky Way is one.
11. A shooting star.
15. Abbreviation for route.





Star Trick Maze

Can you get your spaceship back to Earth without getting lost in this strange galaxy?

[illegible]

From: Scholastic Magazine

PLANET OF UNUSUAL ANIMALS

These strange lunar creatures cannot find the words in the word bank. Can you find them all?

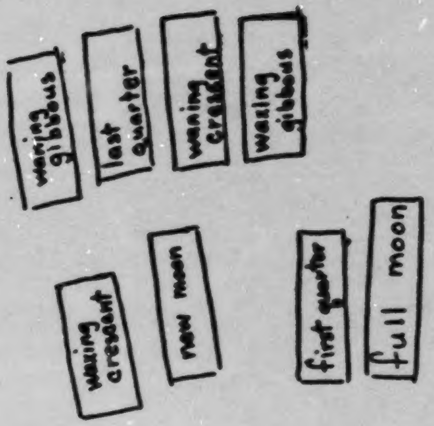
Word Bank

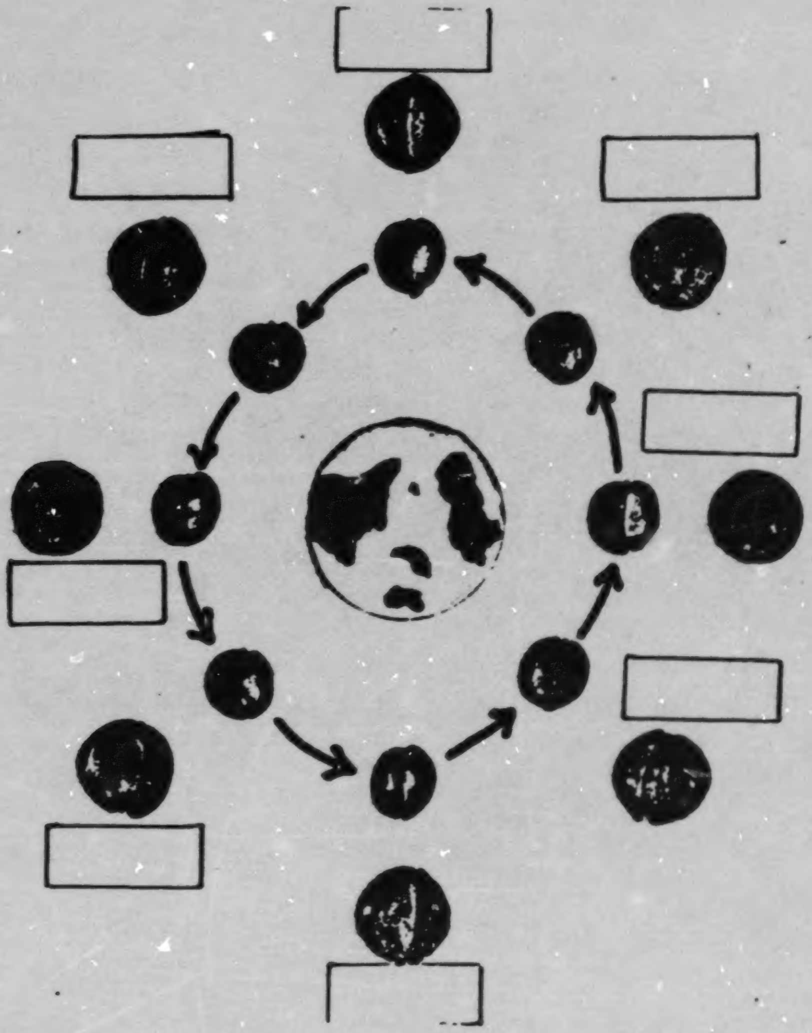
Phobos
Deimos
Moon
Lunar
Astronaut
Equipment
Rotate
Revolve
Orbit
Satellite
Spacecraft
Jagged

Metamorphic
Sedimentary
Igneous
Crater
Seas
Telescope

T E L E S C O E Q U I P M E N T
F E M A T A M O R P H I C P U E
A E L S C R A T E M R A M A N V
R V D E C G A J S U O E N G I L
C E S E S K I M E P H O B A S O
E I G N E C R A T E R O N U S V
C R T I B R R S A T E L L I T E
A R E V O L V P S O E T A T O R
P R B T C O S A E S O M S I E D
S E D I M E N T A R Y R A N U L

Match the phases of the moon with the correct picture.


waxing gibbous
last quarter
waning crescent
waning gibbous
waxing crescent
new moon
first quarter
full moon



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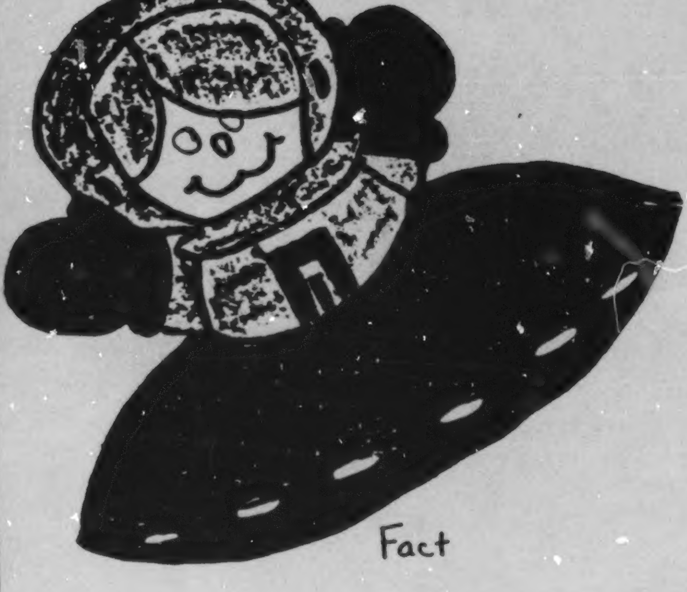
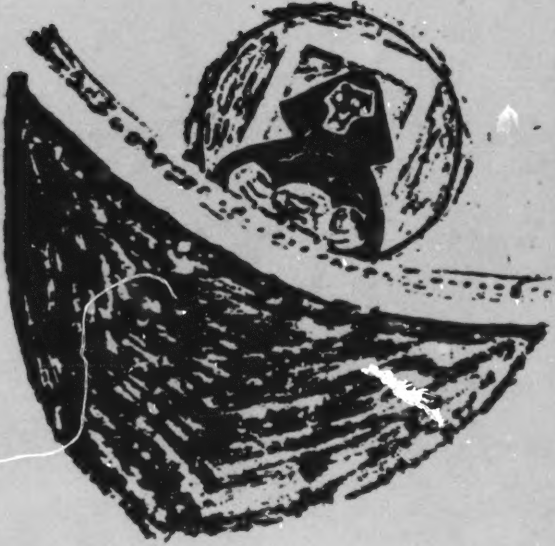
Folder Game

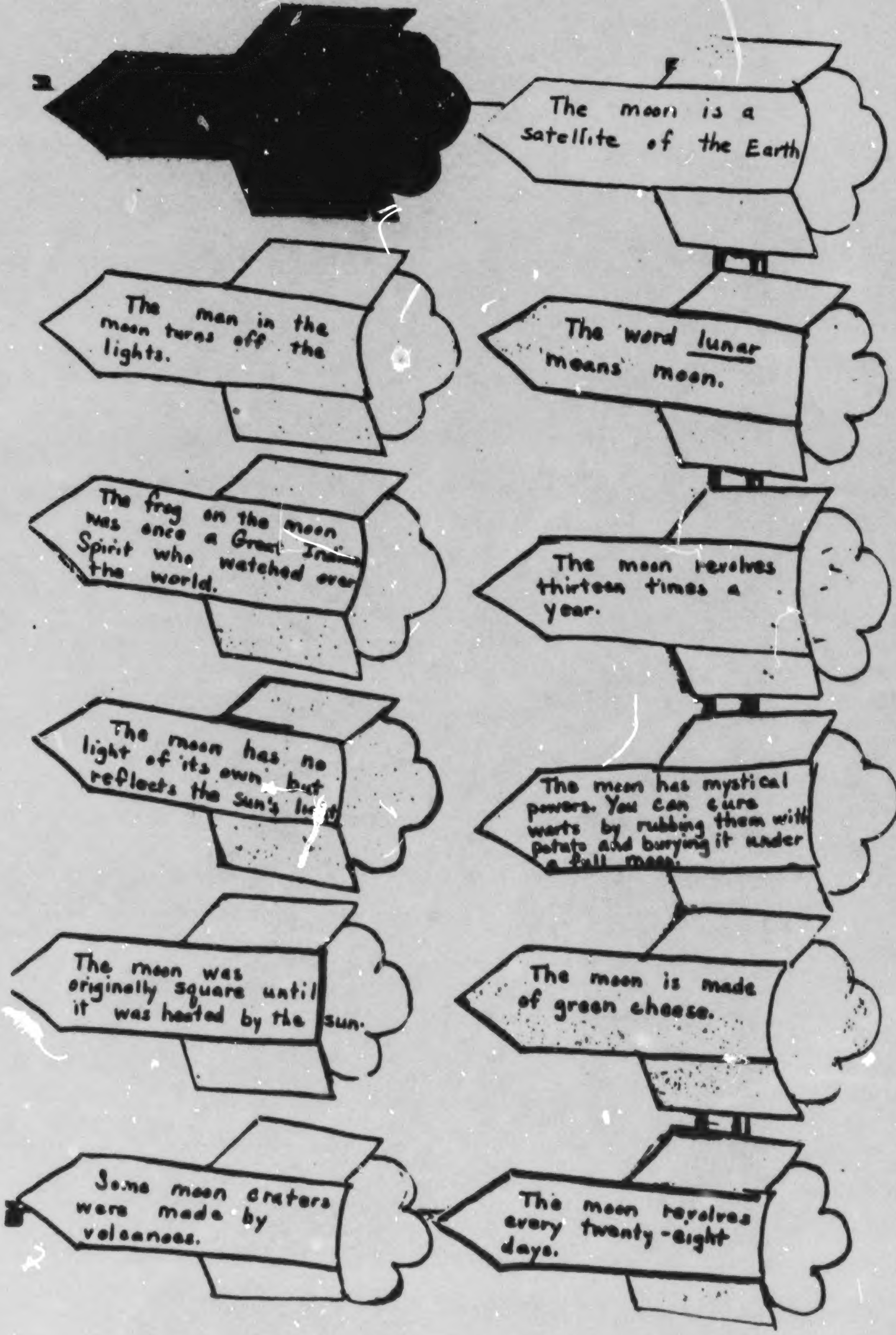


Fact



Fantasy

Read the sentences on the rockets. Put them with the correct spaceship.



The man in the moon turns off the lights.

The frog on the moon was once a Great Indian Spirit who watched over the world.

The moon has no light of its own but reflects the sun's light.

The moon was originally square until it was heated by the sun.

Some moon craters were made by volcanoes.

The moon is a satellite of the Earth

The word lunar means moon.

The moon revolves thirteen times a year.

The moon has mystical powers. You can cure warts by rubbing them with potato and burying it under a full moon.

The moon is made of green cheese.

The moon revolves every twenty-eight days.

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Appendix B

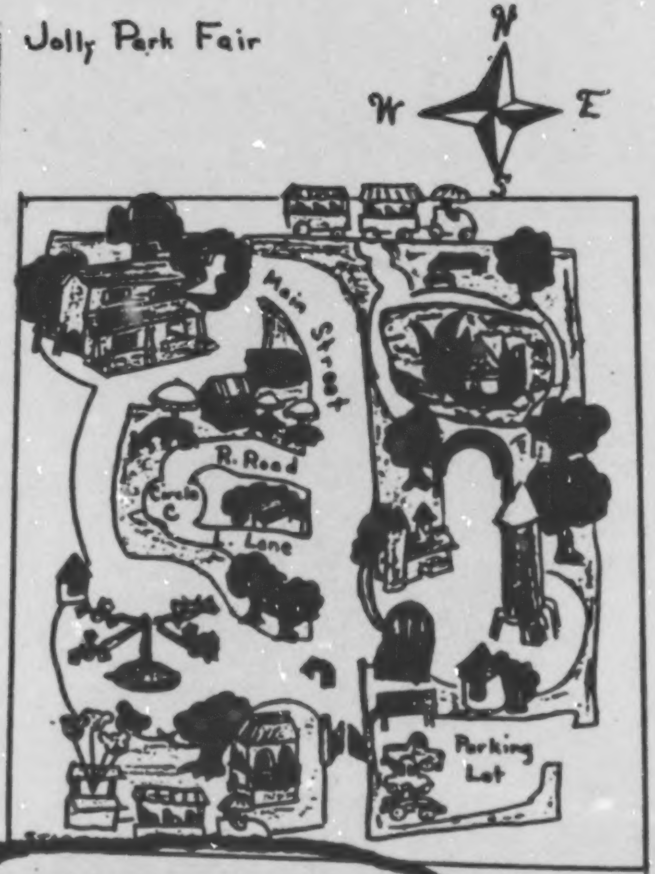
Social Studies Unit

The following appendix includes worksheets and activities developed as a fourth grade social studies unit. The unit would be suitable for intermediate grades.

Many teacher-made activities and folder games were developed for the purpose of this study. The games were laminated with envelopes, or pockets, on the outside of the folder for sonvenient storage of game pieces. Many activity sheets were printed on colored paper and laminated for use with a grease pencil. Yarn was attached to folders for ease of tracing map directions. Wherever possible, questions and answers were color coded for ease of identification and for pupil motivation.

Following Directions

Jolly Park Fair



You have won first prize! You get to go to Jolly Park Fair. Jolly Park Fair is very big. You could get lost. Below is a visitor's guide. This will direct you all around. Read carefully so you don't miss anything. Use the yarn to mark your trail.

*Catch the Jolly Park Express under the Bear Balloon, ride it east to the ticket booth.
*Walk north through the gate. Look for an arrow.
*Turn west into Wham! Land. Go for a ride on the flying bats. Leave Wham!Land and go north to Boo! Land.
*Take a tour through the Haunted House. Now it's time for lunch. Leave Boo! Land. Turn south on Main Street, then west on R. Road.
*Sit down and have a hamburger. After lunch, walk south through C Circle, then east on L. Lane.
*Cross the bridge and go east to the entrance of Zoom! Land.
*Take a ride on a rocket and then go to the space station.
*It's getting late. Time for one more ride. Go north and walk under the arch.
*Take a canoe heading east and go all around Zap! Land.
*Get off at the winding road and go north. Catch the Jolly Land Express. Go east, then south to the parking lot.
*Thanks for coming. Hope you had a good time!

46

Adapted from Frank Sheffer

53

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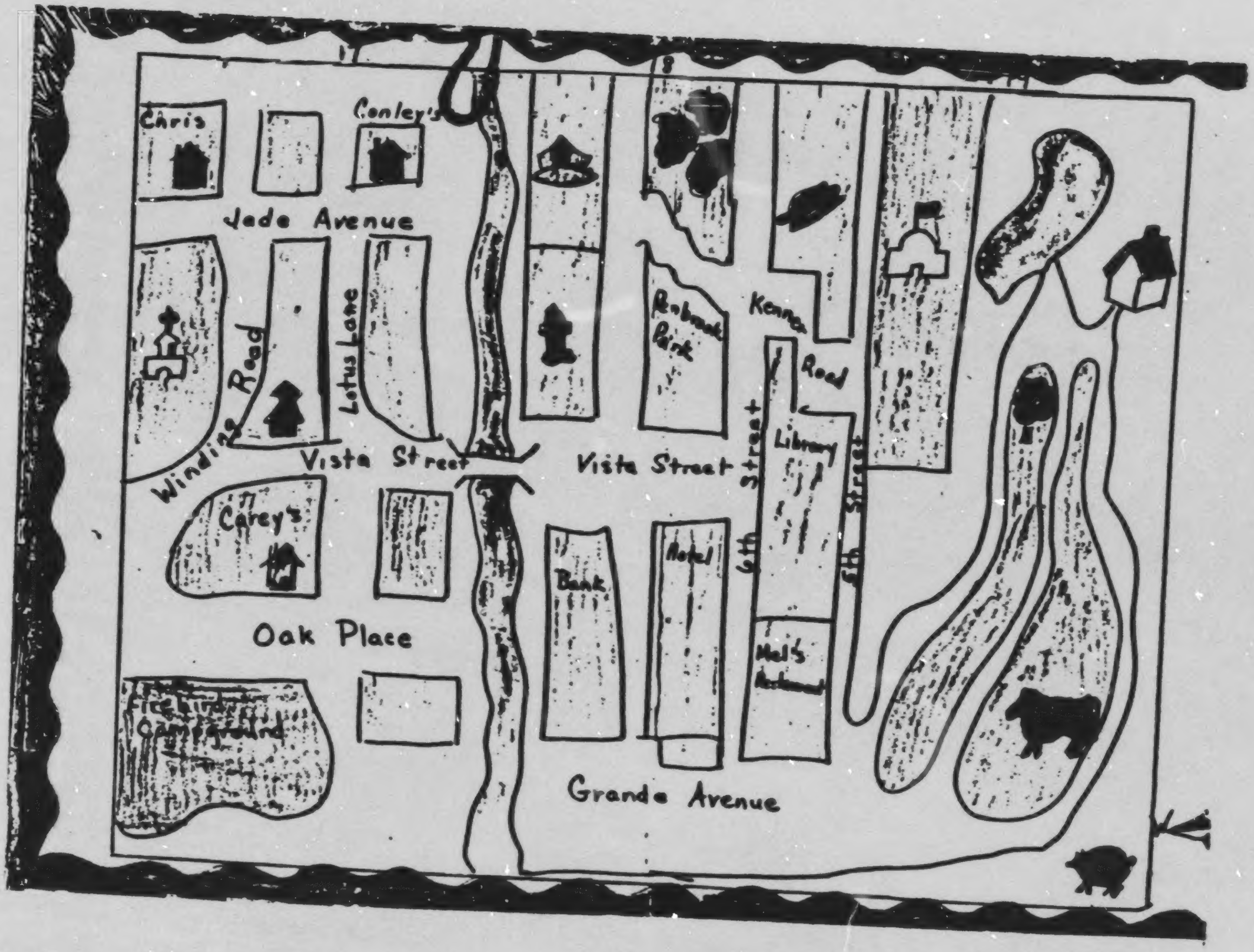
Attach yarn to trace route. Use with laminated dittos stored in folder.

Comprehension - Map Skills


Chris
Conley's
Jade Avenue
Winding Road
Lotus Lane
Vista Street
Vista Street
Carey's
Oak Place
Fireside Campground
Rolbrook Park
Kenna Road
Library
6th Street
6th Street
Bank
Hotel
Mel's Restaurant
Grande Avenue

Penbrook Club Pioneers

"Are you ready, Terri?" Mrs. Conley asked her daughter. "Let's make sure we have everything: compass, map, flashlight. All set. Let's go."

Mrs. Conley lives in a very large city called Penbrook. She works downtown. Terri has never been downtown. She has only been around her own neighborhood. Mrs. Conley wanted Terri to explore downtown.

One day Mrs. Conley said, "Let's form an exploring club. We can call ourselves the Penbrook Pioneers. You can bring two friends, Terri. We'll take five days and bike through the whole city."

Terri and her mom started from their house. They walked to Chris' house. Then they went along Winding Road and Vista Street to Cary's house. "We can stay at Firebird Campgound tonight," said Mrs. Conley. "Tomorrow we'll hike downtown."

Get your map of Penbrook. Find the part to be used with page 17.

1. With your pencil, follow the streets Mrs. Conley took to get to the campground. Check the story if you have forgotten the directions.
2. Follow the directions below and draw symbols in the right places on the map. The legend on page 16 shows you which symbols to use.

   a house next to Cary's house
   a stop sign on the round corner of Lotus Land and Vista Street
   a flag on top of the school
   a tent in the campground
   a tree behind the church
3. Fill in the correct directions: North, South, East or West. Look at the compass on the map for help.

   The Conley's walked:

   ____________________ on Winding Road
   ____________________ to Chris' house
   ____________________ to the campground
   __________ and __________ to Cary's house

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Exploration Downtown

Tuesday morning, the Penbrook Pioneers woke up early. After breakfast, they walked up Lotus Lane. The group crossed over the bridge and hiked downtown.

Mrs. Conley got out her map. "We want to go to City Hall. I think this is the best way to hike," Mrs. Conley said, drawing some lines. "Everyone, get out your compasses. They will help us to go in the right direction."

The Pioneers walked past the firehouse and up to the police station. The police gave each girl a badge. Next, they crossed through Penbrook Park and over to Harry's Hot Dogs. "Boy, am I hungry!" said Terri. Twenty minutes later, the girls arrived at City Hall. They visited the mayor's office and lots of other people, too.

"We're staying in a hotel," said Mrs. Conley. "First, let's have dinner in a restaurant. We've done a lot of exploring today!" So they all walked down 5th Street to the restaurant on Grande Avenue. Later, the group crossed the street to the hotel.

Get your map of Penbrook. Find the part to be used with page 18.

1. With your pencil, follow the streets the Pioneers took from Firebird Campground to the hotel. Read the story again if you don't remember the directions.
2. Fill in the correct direction on the line below: North, South, East or West. The compass on the map will help you. The pioneers walked:

   ____________________ on Vista Street

   ____________________ on 7th Street

   ____________________ to the hotel

   ________________ and ________________ on Kenner Road

3. Follow the directions below and draw the symbols in the right places on the map. The legend on page 16 shows you which symbols to use.

   a dollar sign on the bank
   a bed on the hotel
   a bench in the park
   a fork on Mel's Restaurant
   a book on the library

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Name ____________________ **Exploration**

Down on the Farm

Early Wednesday morning, the Pioneers left the hotel. Walking east, they passed the restaurant. The group soon reached a place where Grande Avenue turned into three farm roads. "Let's find which way is North," said Mrs. Conley. "The lake is in that direction." Everyone got out their compasses.

"We take this path to the lake," Terri pointed. "Let's go." They walked past some sheep. At the lake, the girls caught some fish and cooked them over a campfire. After lunch, they hiked along another road, past an orchard. At the end of the road, the Pioneers found a new path. They wanted to walk by the pig and up the road to a farmhouse.

"Now you have seen all of Penbrook community," stated Mrs. Conley, when they reached the farmhouse, "your own neighborhood, downtown and the farmland. Next year, let's plan another trip. Maybe we can explore a huge park. Or maybe we'll explore the bottom of the ocean!"

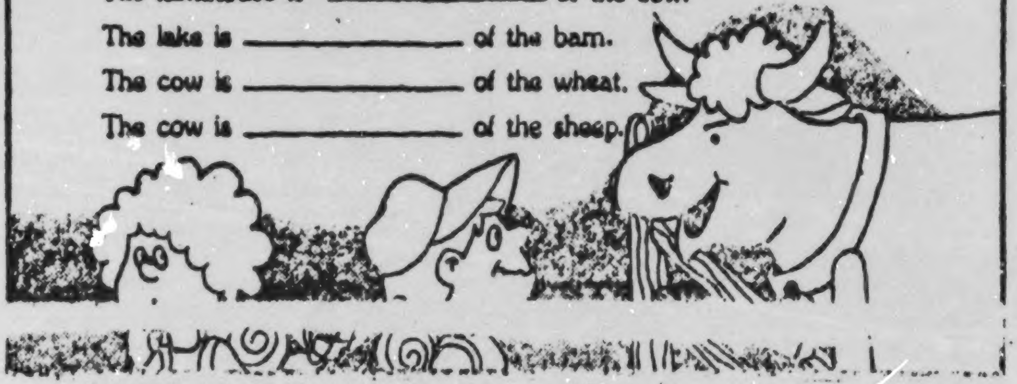
Get your map of Penbrook. Find the part to be used with page 19.

1. With your pencil, trace the path the Pioneers followed from the hotel to the farmhouse. Read the story again if you don't remember the directions.
2. Follow the directions below and draw the symbols in the right places on the map. The legend on page 16 shows you which symbols to use.

   three wheat bundles above the cow
   a fish in the lake
   a barn between the farmhouse and the lake
   two more apple trees in the orchard

3. Fill in the correct direction in the blank space below: North, South, East or West. The compass on the map will help you.

   The farmhouse is ____________ of the cow.
   The lake is ____________ of the barn.
   The cow is ____________ of the wheat.
   The cow is ____________ of the sheep.



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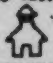
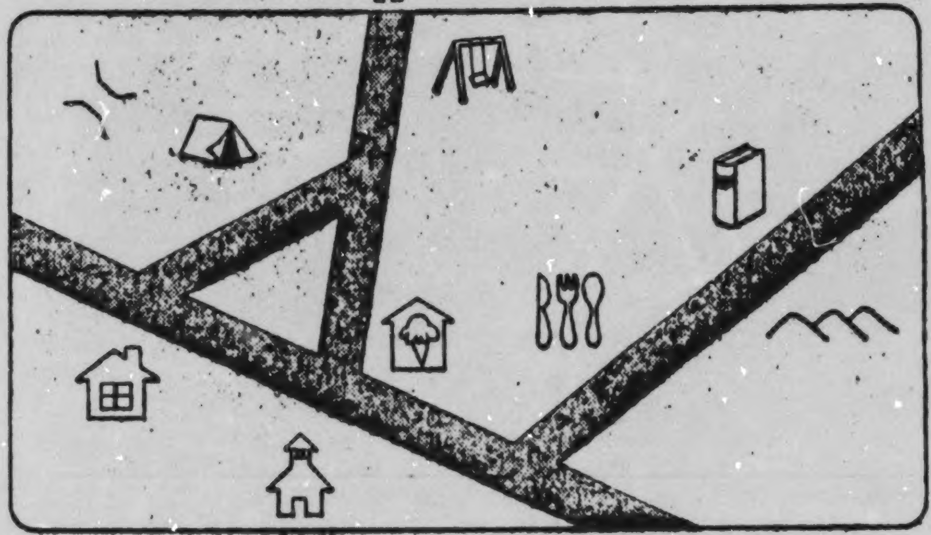
Name ______________________ **Symbols**

Signs To Know

Lisa took a trip to Shady Grove. Next week, her friend Kevin is going to Shady Grove, too. "I'll draw him a map!" Lisa said. "Then Kevin will know where everything is."

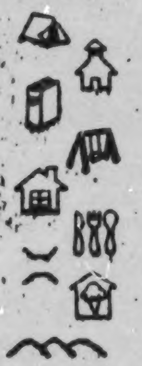
Lisa drew some roads. She drew some buildings. "H-m-m-m. I can't write 'School' on this building. There isn't enough room. I'll make a symbol for it instead." This is what I'll use: 



Most maps have symbols. Symbols are signs but they stand for real things.

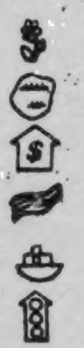
Match the symbol with its name:

house
tent
restaurant
library
school
park
ice cream store
hills
bridge



Draw these symbols where they will fit best on your map.

a flower
a lake
a bank
a river
a boat
a traffic signal



Name ______________________ Symbols

Signs To Know

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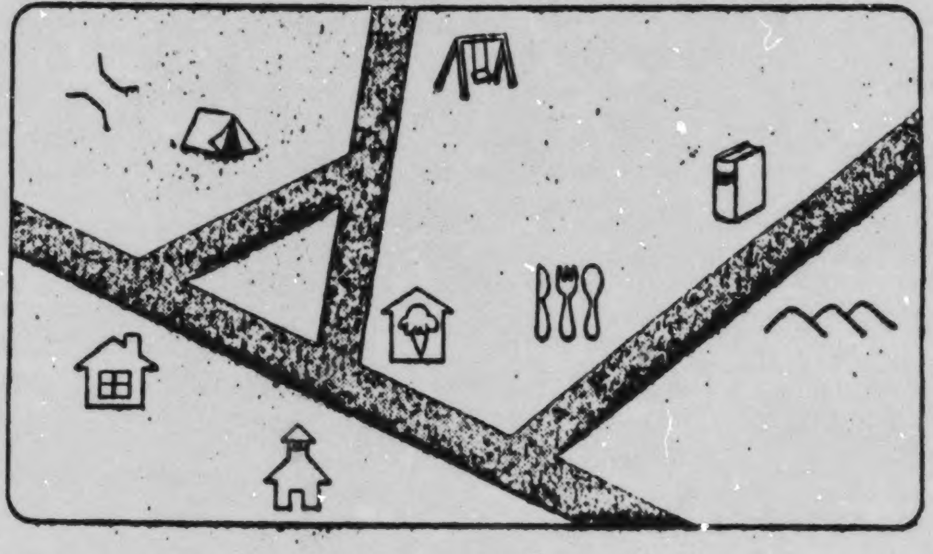
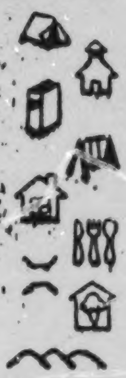
Lisa drew some roads. She drew some buildings. "H-m-m-m. I can't write 'School' on this building. There isn't enough room. I'll make a symbol for it instead." This is what I'll use:



Most maps have symbols. Symbols are signs but they stand for real things.

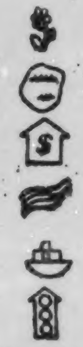
Match the symbol with its name:

- house
- tent
- restaurant
- library
- school
- park
- ice cream store
- hills
- bridge

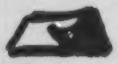
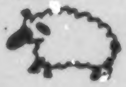


Draw these symbols where they will fit best on your map.

- a flower
- a lake
- a bank
- a river
- a boat
- a traffic signal

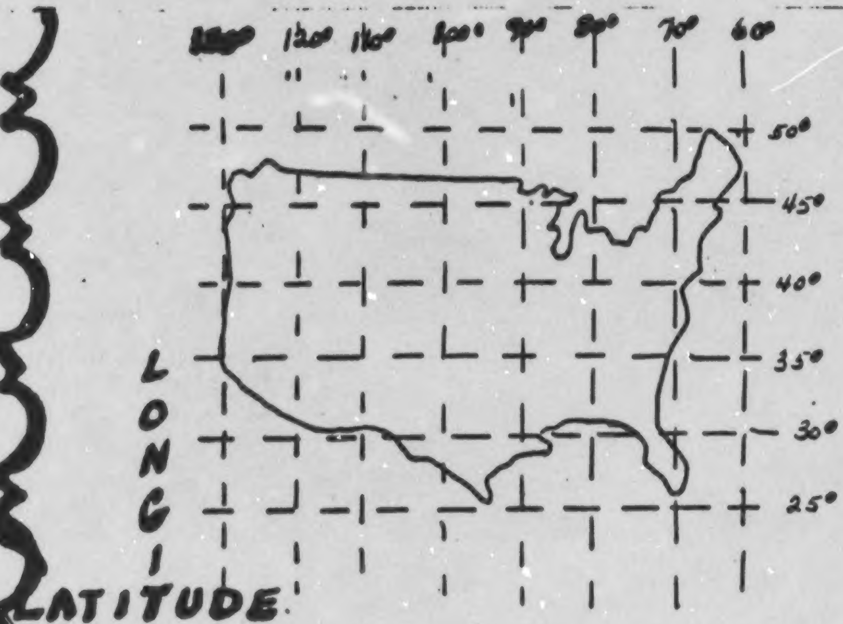


Choose the word
or phrase of the same color to complete
the sentence.

A city near the equator would be...
Another word for sign is...
There are four main directions...
A flat picture of the earth
is called...
The symbol  stands for...
To find distance you...
It is always cold at the...
If you saw this symbol 
you are probably...
The earth is covered with...
You can see what Earth looks
like...

Comprehension--Map Skills

Adapted: Frank Schaffer 1980



If we know the latidude and the longitude, we can easily find where they meet on the map.

Longitude (north and south) lines, and latitude (east and west) lines are numbered in degrees (we use a little circle 20°, 30°, 40°.

New Orleans is at longitude 90° and latitude 30 Place it on the map correctly. (Find longitude 90 Find latitude 30°. New Orleans is where the two lines meet.

Locate and place the following cities on the map:

Reno, Nevada - longitude 120° and latitude 40°

Charlotte, North Carolina - longitude 80° and latitude 35°.

Wasau, Wisconsin - longitude 90° and latitude 45

What are the map coordinates (longitude and latitude) for your city?

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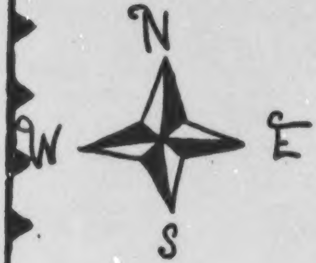
Maps - Following Directions
Trace Robin Graham's Voyage

Read about young Robin Graham's voyage around the world. Using the grease pencil, trace his route from Los Angeles. Use the map in National Geographic, October 1968, on pages 450-451 if you need to.



A Teenager Sails the World Alone.

Identify the continents

There are seven continents (large bodies of land.)

North America
South America

Europe } Eurasia
Asia

Africa
Australia
Antarctica

Use a grease pencil. Check your self on the back of the card. Erase your answers after you are correct.

Can you place the individual continents like a flat map?

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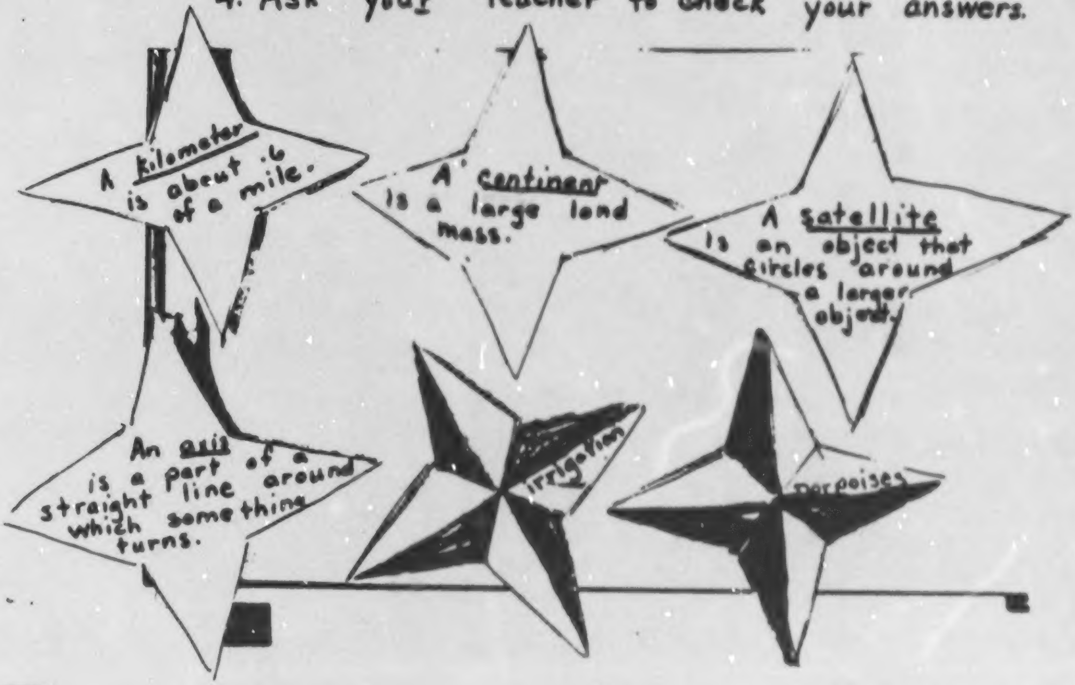
Vocabulary - Syllabication
Map Skills

Rules:
1. A one syllable word is never divided.
2. When a word has a suffix, it is divided between the root word and the suffix if the suffix has a vowel sound.
3. When two vowels come together in a word and are sounded separately, divide the word between the vowels.
4. A compound word is divided between the words that make it a compound.

Directions:

1. Read each sentence on the compass rose and look at the underlined word.
2. Decide if it has one, two, or three syllables.
3. Place it with the correct globe.
4. Ask your teacher to check your answers.



A kilometer is about .6 of a mile.

A continent is a large land mass.

A satellite is an object that circles around a larger object.

An axis is a part of a straight line around which something turns.

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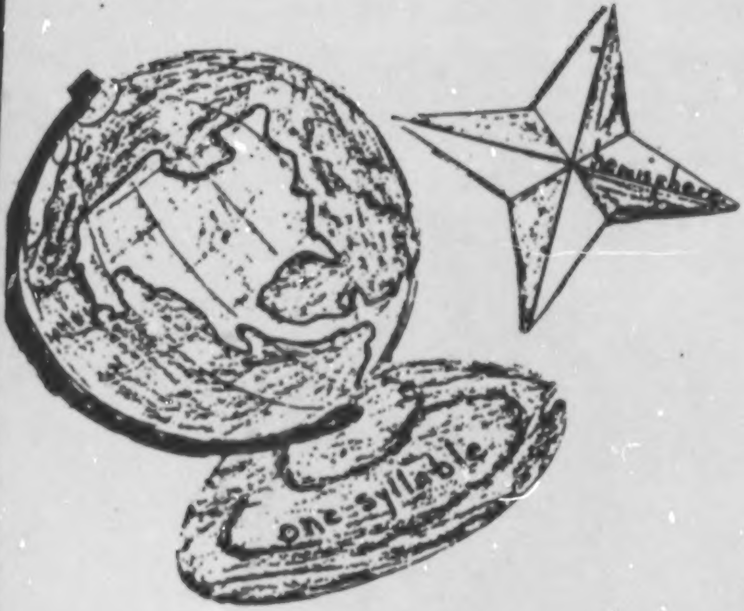
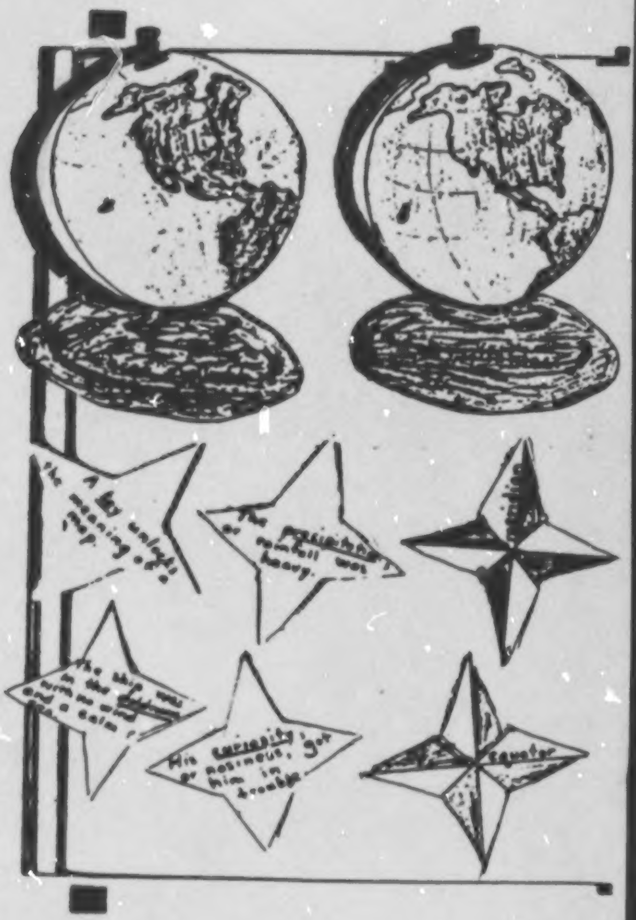

Hemisphere
one syllable


A key unlocks the meaning of a map.
The precipitation, or rainfall was heavy.
The ship was in the doldrums with no wind and a calm.
His curiosity, or nosiness, got him in trouble.
equator

Vocabulary list: axis, boundary, centimeter, compass, continent, curiosity, doldrums, equator, geographer, hemisphere, irrigation, keel, key, kilometer, latitude, log, longitude, meridian, navigate, orbit, Pacific, porpoises, precipitation, satellite, scale, sextant, symbols, universe, voyage. Make colorful. Laminate. Store inside folder with directions on outside.

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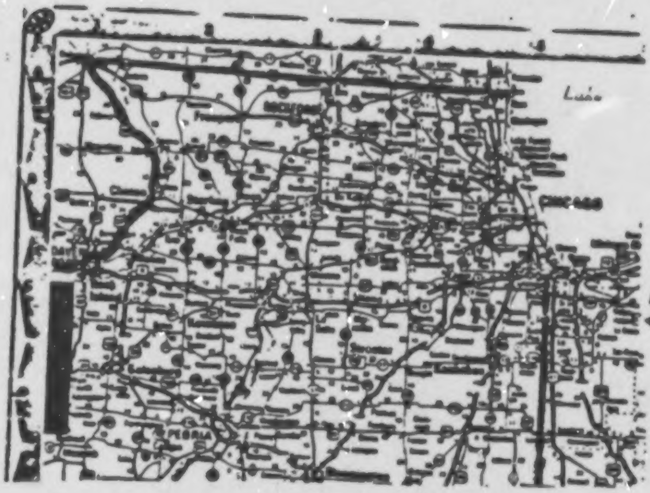
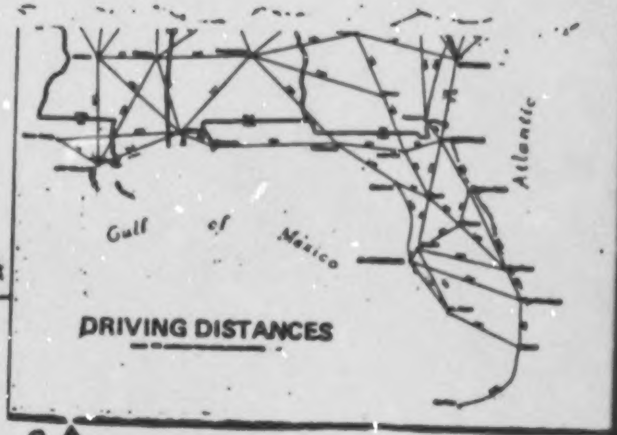
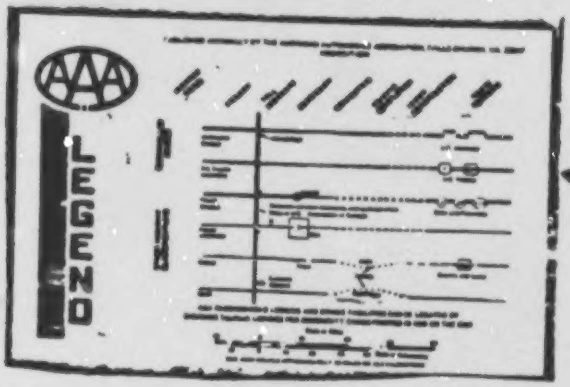
Maps - Reading symbols
Locating information


Lake
ROCKFORD
CHICAGO
PEORIA

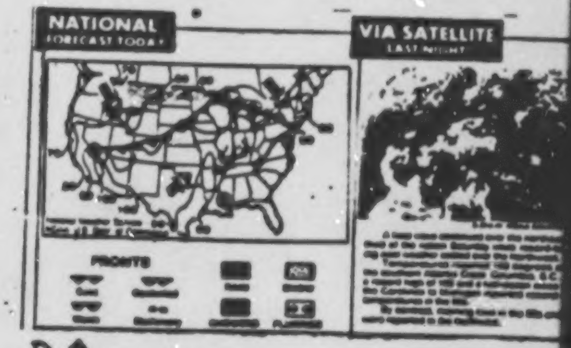
A ←


Gulf of Mexico
Atlantic
DRIVING DISTANCES

C ↑



← B


NATIONAL
FORECAST TODAY
VIA SATELLITE
LAST NIGHT
FRONTS

D ↑

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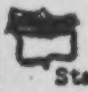
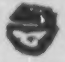
ABOUT MAPS

Highway maps are drawings of places and roads. They do not show every detail, but only important places. Highway maps have special lines for different types of roads. Look at B. This is the legend, and it tells what each line means. The symbols tell the size and conditions of the roads, and allow us to "see" the road before we drive.

The shape and size of the signs not only tell us the route number, but whether it is a main route or a side route, and also whether it goes east and west or north and south. Federal highway signs have this shape , while interstate highways are shaped like this:  State highway signs are round or oval ○, ⬭, and local roads are rectangular. One or two numbers means a main route, and three numbers means a side route. Odd numbers run north and south, whereas even numbers run east and west.

Look at map A and legend B. Fill in the blanks.

________ is a federal highway. It is a side route. It runs

______________________.

________ is an interstate highway. It is a ___________ route
(main, side)

running ________________________.

_________ is a state highway. It runs ______________________.

It is a ___________ route.
(main, side)

__________ is a local highway. It runs ______________________.

Special maps tell us different things. Look at map C. It is valuable for two reasons. The driving distance is shown above the line in red, and the driving time is shown below the line in blue.

(Refer to Map C.)

How long does it take to drive from Tallahasse to Pensacola?

____

How far is it from Ft. Pierce to St. Petersburg? __________

Map D is a differernt kind of map. What does it show you?

____

Name two thing from the legend which are shown on Map D.

____

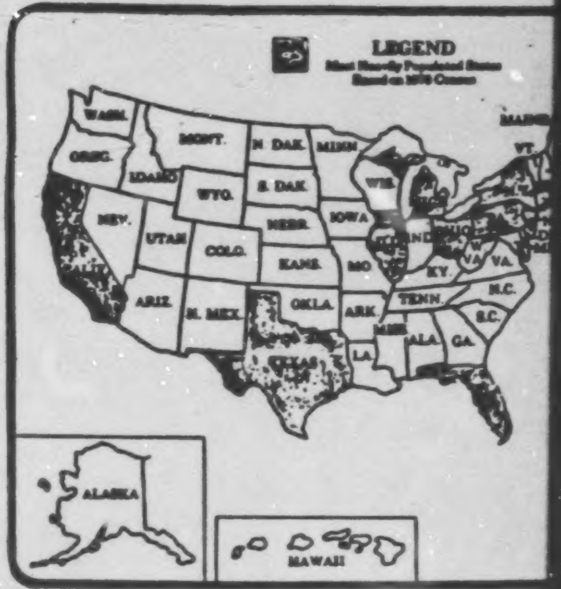
____

There are many different kinds of maps for many different purposes. Look at the other maps in this folder. Match the letter with the correct map.

Political Map ____
Topographic Map ____
Products Map ____
Precipitation Map ____
Population Map ____

Look through you social studies book, the newspaper, and library books to see if you can find other maps which show different things. Maps are very handy tools for understanding the world around us.

0631 04SE79 12E-42A 01452 20751 MC20N70W-2


LEGEND
WASH.
ORE.
IDAHO
MONT.
WYO.
NEV.
UTAH
CALIF.
ARIZ.
COLO.
N. MEX.
N. DAK.
S. DAK.
NEBR.
KANS.
OKLA.
TEXAS
MINN.
IOWA
MO.
ARK.
LA.
WIS.
ILL.
IND.
OHIO
KY.
TENN.
MISS.
ALA.
GA.
S.C.
N.C.
VA.
W. VA.
MAINE
VT.
ALASKA
HAWAII

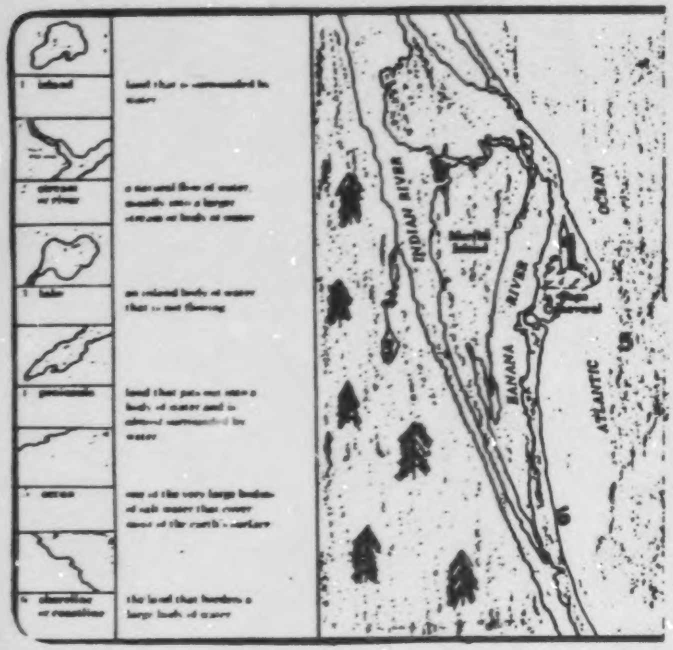
Map Key
J

VENEZUELA
COLOMBIA
ECUADOR
BOLIVIA
BRAZIL
PARAGUAY
ARGENTINA
URUGUAY
F

ANNUAL RAINFALL
G

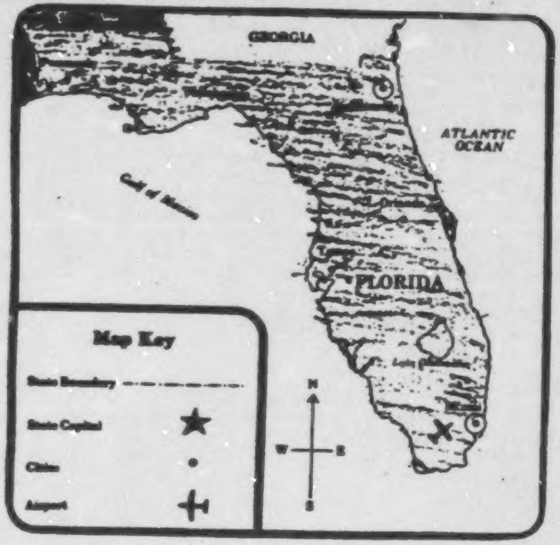
LEGEND
E

This is a map of the Space Coast. Here you see "map language" for different land and water shapes. Map makers (cartographers) often use blue to show water.


island
stream or river
lake
peninsula
ocean
shoreline or coastline
INDIAN RIVER
Merritt Island
BANANA RIVER
ATLANTIC OCEAN

Map sizes differ. That is why a scale, or plan for measurement is important. Can you locate the Space Coast on the larger scale map?

This map shows the whole state. Towns or cities are usually marked with dots: City ·○, larger city ⊙, capital ★, ⊛.
Boundary lines between states is usually a line and a dot _._._._
between countries a line and 2 dots —..—


GEORGIA
ATLANTIC OCEAN
Gulf of Mexico
FLORIDA
Map Key
State Boundary
State Capital
Cities
Airport
N
W
E
S

Cover the wrong answers with the stripe provided:

The capital of Florida is: Tallahassee Miami Tampa
The map shows that the city of Orlando is ____ Miami. larger, smaller, same
The two states bordering Florida are: Alabama and Georgia, Alabama and Mississippi, Georgia and South Carolina
This map of Florida shows ____ major airport (s). one, two, three
The state of Florida is a peninsula. true false
There are mountains in Florida. true false
The city closest to Lake Okeechobee is Miami. true false
The Florida city closest to Alabama is Pensacola. true false
The Atlantic Ocean borders Florida. true false
One of Florida's boundaries is an international boundary. true false
Three states border Florida. true false

Ski Trail

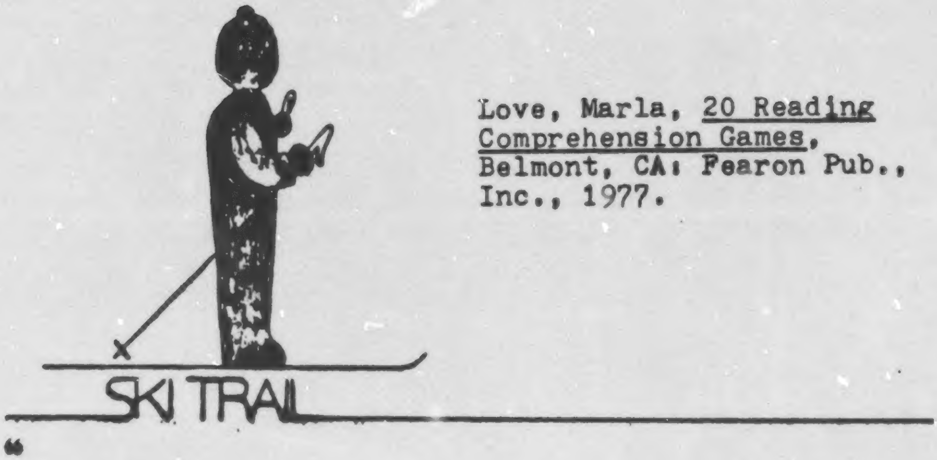
Purpose To use maps and map legends for locating information.

Number of players 2–4

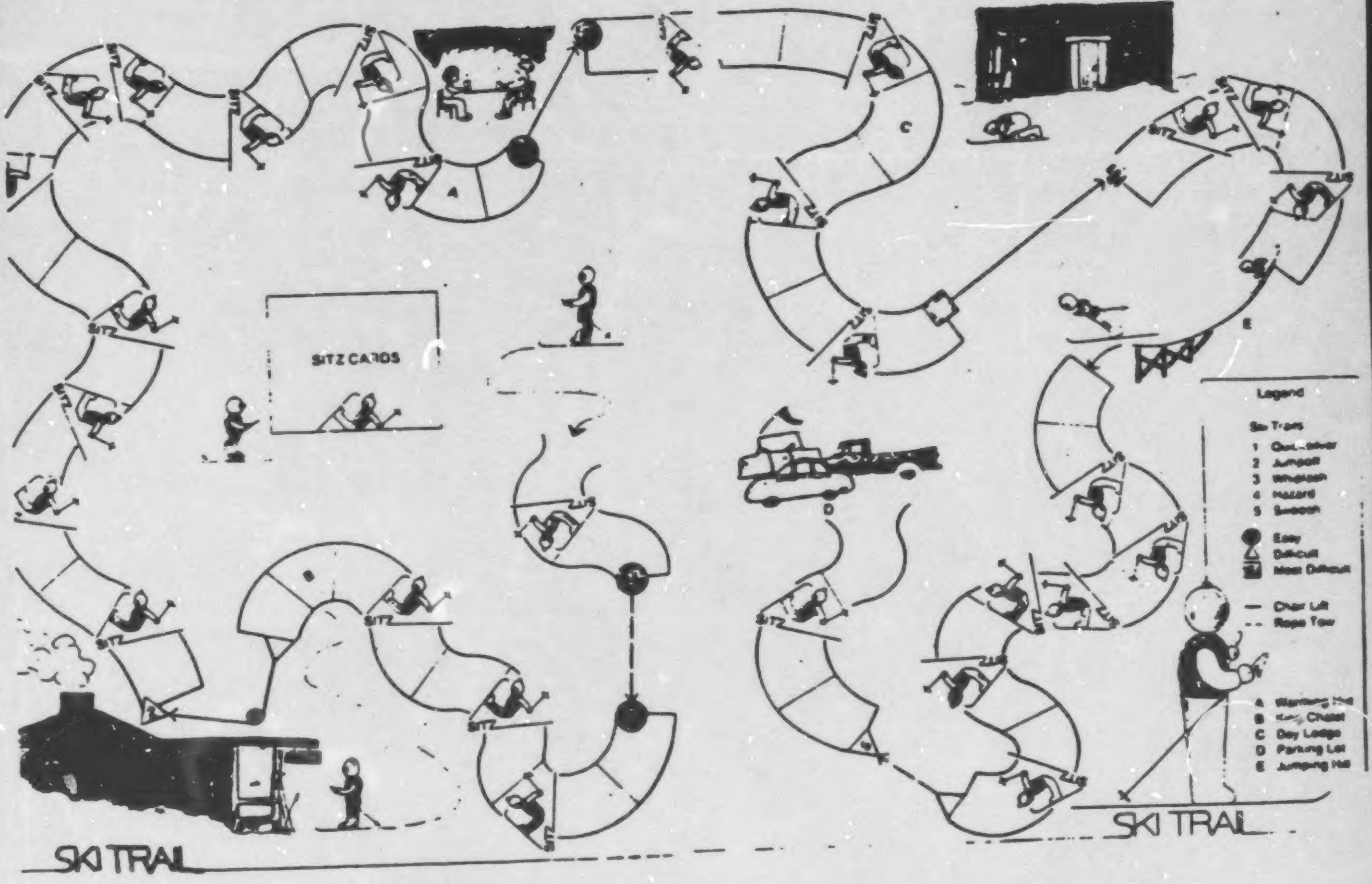
Materials Ski Trail game board
Sitz cards
Single die or spinner
Marker for each player

Rules

1. Each player in turn rolls the die or spins and moves his marker the number of spaces shown.
2. If a player lands on a Sitz Mark (a hole in the snow created when a skier falls, represented on the board by a fallen skier), he draws a Sitz card.
3. The player reads the directions on the card and follows the directions by using the legend, moving to the appropriate numbered or lettered space.
4. The first player to return to the parking lot is the winner.



Love, Marla, 20 Reading Comprehension Games, Belmont, CA: Fearon Pub., Inc., 1977.


SITZ CARDS
SITZ
A
C
D
E
SKI TRAIL
SKI TRAIL
Legend
Ski Trails
2 Jumpoff
3 Whiplash
4 Hazard
5 Swoosh
Easy
Difficult
Most Difficult
Chair Lift
Rope Tow
A Warming Hut
B Chalet
C Day Lodge
D Parking Lot
E Jumping Hill

SITZ
Spend the night
at King Chalet.
Lose a turn.
Ski Trail

SITZ
First skier
at Jumpoff.
Take another turn.
Ski Trail

SITZ
Ski to Jumping Hill.
Injure leg.
Lose a turn.
Ski Trail

SITZ
Move to Easy Rope Tow.
Take another turn.
Ski Trail

SITZ
Chairlift broken
on Jumpoff. Wait there.
Lose a turn.
Ski Trail

SITZ
Find new snow on
Whiplash.
Take another turn.
Ski Trail

SITZ
Go ski on Swoosh.
Tear glove on rope tow.
Lose a turn.
Ski Trail

SITZ
Ski to Warming Hut.
Take another turn.
Ski Trail

SITZ
Eat a hearty lunch
at King Chalet.
Take another turn.
Ski Trail

SITZ
Caught in rain
on Quicksilver.
Quit skiing.
Lose a turn.
Ski Trail

SITZ
Ski to Jumping Hill.
Injure leg.
Lose a turn.
Ski Trail

SITZ
First skier
at Jumpoff.
Take another turn.
Ski Trail

SITZ
et a friend
Day Lodge.
ke another turn.
Ski Trail

SITZ
Chairlift broken
on Jumpoff. Wait there.
Lose a turn.
Ski Trail

SITZ
Lunch time.
Go to Day Lodge.
Lose a turn.
Ski Trail

SITZ
Go to Hazard.
Too crowded.
Lose a turn.
Ski Trail

SITZ
Hazardous skiing
conditions. Move to
Parking Lot and go
home. You win!
Ski Trail

SITZ
Lunch time.
Go to Day Lodge.
Lose a turn.
Ski Trail

Move to
Easy Chair Lift.
Take another turn.
Ski Trail

Move to Easy Rope Tow.
Take another turn.
Ski Trail

Stop at Warming Hut
for hot chocolate.
Lose a turn.
Ski Trail

Go to Hazard.
Too crowded.
Lose a turn.
Ski Trail

Caught in rain
on Quicksilver.
Quit skiing.
Lose a turn.
Ski Trail

Move to
Difficult Chair Lift.
Take another turn.
Ski Trail

Hit ice on Whiplash.
Lose a turn.
Ski Trail

Powder snow on
Swoosh. Get in
some good skiing.
Take another turn.
Ski Trail

Enjoy good skiing
on Hazard.
Take another turn.
Ski Trail

Move to Most
Difficult Chair Lift.
Lose a turn.
Ski Trail

Short run on Quicksilver.
Try again.
Take another turn.
Ski Trail

Stop at Warming Hut
for hot chocolate.
Lose a turn.
Ski Trail

Enjoy good skiing
on Hazard.
Take another turn.
Ski Trail

Move to
Easy Chair Lift.
Take another turn.
Ski Trail

Great jump
at Jumping Hill.
Take another turn.
Ski Trail

Short run on Quicksilver.
Try again.
Take another turn.
Ski Trail

Move to Most
Difficult Chair Lift.
Lose a turn.
Ski Trail

Spend the night
at King Chalet.
Lose a turn.
Ski Trail

Powder snow on
Swoosh. Get in
some good skiing.
Take another turn.
Ski Trail

Move to
Difficult Chair Lift.
Take another turn.
Ski Trail

Move to
Difficult Rope Tow.
Take another turn.
Ski Trail

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TREASURE MAP
X

Directions

33

Hide an article on the playground. Make a "treasure map" and give it to a friend. Can he or she find where the article is hidden?

110%

Write a story about pirates and their treasure.

Make a map on a piece of brown paper bag. Age its appearance by putting it in the oven for a few minutes at low temperature.

MAP SKILLS

Compare and contrast three different maps noting differences in scale, different information given on the map, different types of maps, and uses they would have.

Locate specific information on the maps.

Devise a game. Suggestions include:

1) Sail around the world
2) Drive across country
3) Island hop as a Hawaiian tourist

Teacher-made game cards will enable pupils to apply reading-thinking skills such as cause and effect, and inference.

Teacher questions would give the pupils guidance:

1) Why would a driver be able to attain more mileage in the same amount of driving time than another driver?
2) What would cause one to be at a standstill while sailing?

Bibliography for students

The following is a list of books available from the school library.

Brindze, R. *Sailing*. E. M. Hale and Company, 1962. All about sailing the seven seas. Maps, illustrations. Road maps of the sea.

Brown, Lloyd A. *Map Making: The Art that Became a Science.* Boston: Little Brown, 2960. History of map making from ancient times to the present. Exploration of instruments and methods.

Clark, W. R. *Explorers of the World*. New York: The Natural History Press, 1964. Explorers from the Phoenicians to Modern times. Liberally sprinkled with maps, charts, and illustrations.

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The First Book Atlas. New York; Watts, 1960. Brief explanation for use.

Foster, Genevieve. *1492: Year of Columbus*. Interaction of events and people in 1492. Carefully researched maps and charts. Highly readable history.

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Hammond's Illustrated Atlas for Young America. Maplewood, New Jersey, 1964.

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Pons, Helene. The Story of Vanja. Viking, 1963. Fictional story of what happened to a young boy in Russia. Maps.

Popescu, Julian. Rivers of the World. New York: Henry Z. Walck, Inc.,1962. Stories of life on the Danube, Amazon, Niger, and Ganges. Maps, illustrations.

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Appendix C

Teacher Resource Books

Teacher Resource Books

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Otto, W., and Erickson, L. *Inservice education to improve reading instruction,* Newark Delaware: IRA, 1973.

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Robinson, H. A., and Thomas, E. L. Fusing reading skills and content. Newark, Delaware; IRA, 1969.

Schulwitz, B. S., Editor. Teachers, tangibles, techniques: Comprehension of content in reading. Newark, Delaware, IRA, 1975.

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Apache & Spache. Reading in the elementary school. Boston: Allyn & Bacon, Inc., 1973.

Thelen, J. Improving reading in science. Newark, Delaware: IRA, 1978.

Thomas, E. L. & Robinson, H. A. Improving reading in every class. Boston: Allyn & Bacon, Inc., 1982.

Appendix D

The following appendix includes activities developed for presentation of the inservice training, the evaluation and the attitude survey forms, and a sampling of activities developed by the teachers who participated in the inservice training.

The following list will aid location:

	Page
Attitude survey	77
Evaluation forms	78
Presentation activities	79
Participants' activities	
First grade	88
Second grade	92
Third grade	94
Fourth and fifth grade	97

WHAT DO YOU THINK?

Instructions: Place a check in the box that best represents your agreement with the corresponding statement.

	STRONGLY AGREE	AGREE	TEND TO AGREE	UNDECIDED	TEND TO DISAGREE	DISAGREE	STRONGLY DISAGREE
1. A content area teacher is obliged to help students improve their reading ability.							
2. Technical vocabulary should be introduced to students in content classes before they meet these terms in a reading passage.							
3. The primary responsibility of a content teacher is to impart subject matter knowledge.							
4. Few students can learn all they need to know about how to read in the first six years of school.							
5. The sole responsibility of teaching students how to study should lie with reading teachers.							
6. Coursework in how to teach reading in content areas should be required for teaching certification.							
7. Reading skills need be taught at the elementary level during reading groups only.							
8. A teacher who wants to improve students' interest in reading should show them that he or she likes to read.							
9. Content area teachers should teach content and leave reading instruction to reading teachers.							
10. A content area teacher should be responsible for helping students think on an interpretive level as well as on a literal level when they read.							
11. Content area teachers should feel a greater responsibility to the content they teach than to any reading instruction they may be able to provide.							
12. Content area teachers should help students set purposes for learning.							
13. Every content area teacher should teach students how to read material in that teacher's content specialty.							
14. Reading instruction in secondary schools would be unnecessary if elementary schools were successful in their jobs.							
15. Content area teachers should be familiar with theoretical concepts of the reading process.							
16. I am well trained and prepared to teach reading in the content areas.							

Estimate how much time per week you spend teaching reading in the content areas of social studies and science.

None ________

Less than 15 minutes ________

15 to 30 minutes ________

30 minutes to 45 minutes ________

More than 45 minutes ______ Be specific ________

Adapted from Estes & Vaughan, Reading and Learning in the Content Classroom, Allyn & Bacon, 1978.

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INSERVICE COMPETENCIES EVALUATION

Date________________

Consultant Instructor Nancy E. Clements

Name______________________________

Social Security____________________

Component 1074320

Title Reading in the Content Area

List three (3) competencies related to the above component that were increased by participation in this activity.

1.____

2.____

3.____

(you may use the back of this form for additional space)

- -

BREVARD COUNTY SCHOOLS
OPINION SURVEY OF INSERVICE PARTICIPANTS

Selected Criteria

Mark X in the block following each criteria that best expresses how you feel about this staff development experience.	To a very high degree	To above average degree	To below average degree	To no degree	Not applicable
1. The methods and/or media used to present this inservice were effective.					
2. The objectives of this inservice were clarified and discussed.					
3. There was agreement between announced objectives and what actually took place.					
4. This inservice met my immediate and/or my long range needs.					
5. The physical facilities were appropriate for the activity.					
6. The leaders conducted this inservice with enthusiasm.					
7. The participants appeared to feel free to interact with the leaders or other participants.					
8. It was evident that there was planning and preparation for this inservice.					

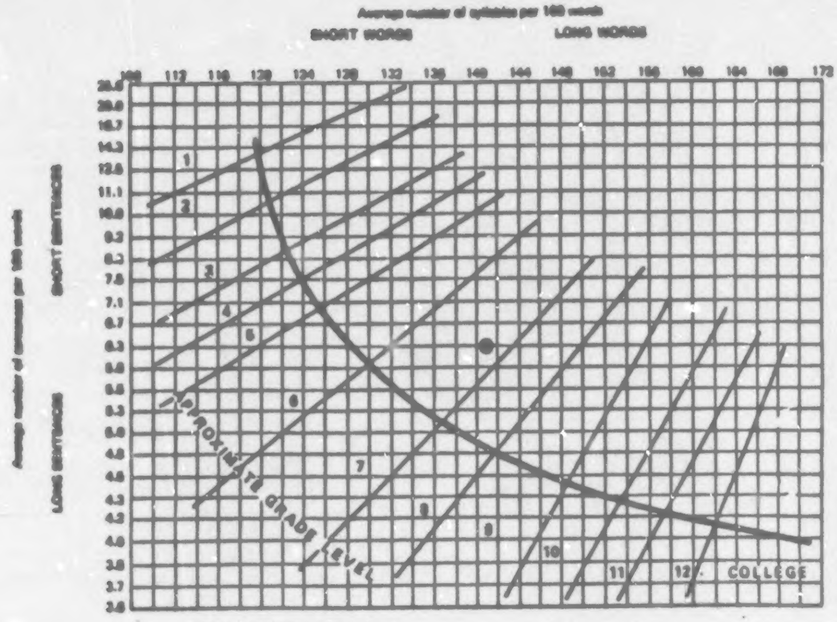
[illegible] - July 1, 1976

Fry Readability Graph

1. Randomly select three 100-word passages from near the beginning, middle, and end of the selection or book. Don't count numbers. Do count proper nouns.
2. Count the total number of sentences in each hundred word passage (estimating to the nearest tenth of a sentence). Average these three numbers.
3. Count the total number of syllables in each 100-word sample. There is a syllable for each vowel sound. For example: cat (1), blackbird (2), continental (4). Don't be fooled by word size. For example: *polio* has three syllables, *through* has one. Endings such as -y, -ed, -el, or -le usually make a syllable. For example: ready (2), bottle (2).

   When counting syllables, Fry suggests that you put a mark above every syllable over one in each word and add 100 to your total count of marks. This simplifies the syllable count since one-syllable words would be included in the adding of 100, as would the first syllable in each word with one or more marks.

   Average the total number of syllables for the three 100-word samples.
4. Plot on the accompanying graph the average number of sentences per 100 words and the average number of syllables per 100 words. The perpendicular lines mark off approximate grade level areas.
5. If a great deal of variability is found, more samples to determine an average should be used.



Fry Readability Graph.

READING IN THE CONTENT AREA

CLOZE PROCEDURE

(Developed in 1953 by Wilson Taylor)

As you read, try to replace the words which have been omitted:

Their accounts may be _______________, but many consumers write _______________ anyway during periods of _______________ and inflation. Their intention _______________ is to try to _______________ to the bank with _______________ before a merchant turns _______________ the check.

The degree of successful replacement of exact words deleted can be considered and index of your ability to read the material from which it is taken. It matches the material's context with the reader's level of ability and the author's purpose and/or style.

To construct a Cloze passage:

1. Select a passage from materials your student's have not read previously. (Approximately 300 words is suggested.)
2. Type the first sentence intact. Starting with the fifth word in the second sentence, delete every fifth word until you have fifty deletions. Replace each deletion with an' underlined blank fifteen spaces long.
3. Finish the sentence in which the fiftieth deletion occurs. Type one more sentence intact.

Since this may be a frustrating experience for children who expect success, it is suggested that you do short passages first with guided practice.

To score:

1. Accept only exact replacements.
2. Determine the percentage scores for each individual.
3. Compute the class average and compare it to criterion scores.
4. Use the material appropriately or discard it as unsuitable.

CRITERION SCORES

If the mean score is:	The material is considered:
60% or higher	Easy for this group and will be on their independont level.
40%--60%	Suitable for this group and within their instructional level.
40% or below	Difficult for this group and will be on their frustation level.

DIRECTED READING THINKING ACTIVITY (DRTA)

The DRTA is a procedure for directing reading. It can be used with a basal reader lesson, content area reading, or any type of reading material. Its primary goal is active involvement of the reader with the passage. The involvement is intended to lead to improved comprehension as children question, process information, and find answers as they read.

During the DRTA, children make predictions before they read, then read the material, and check their predictions as they read further. This reading process of predict-read-check-predict-read-check, etc., is motivating and encouraging for the child. He is setting his purpose and will adjust his rate to fit his purpose and the material.

The steps involved in the DRTA are: (1) make predictions from picture clues and/or title; (2) read material; and (3) check predictions. During Step 1 the teacher directs the students' attention to the concepts to be developed or to the relationships to be understood. Predictions may be elicited which focus on stated details or on information which must be inferred. All predictions are accepted and respected. The teacher doesn't judge the predictions.

During Step 2, the students read to a predetermined point in the passage.

Discussion takes place during Step 3. Predictions are checked in order to be confirmed, rejected, or retained as tentative. Predictions that are confirmed can be supported by having a child orally read material that supports his prediction. Predictions that are rejected should be rejected by orally reading information that disproves the prediction. Some predictions will be neither proved nor disproved and are retained as tentative.

Step 1 is repeated over the next portion of the passage as the teacher again guides the students to make predictions.

Content clues for vocabulary are worked on within this activity since new words are not introduced. The student develops independent word attack skills.

Dr. Rosie Joels, UCF

TABLE I

DIFFERENCES BETWEEN THE DIRECTED READING ACTIVITY AND THE DIRECTED READING-THINKING ACTIVITY*

ELEMENTS	DR-TA	DRA
Preparation of or Purposes for Reading	Set by the group or by the individual	Set by the author.
Interaction	Encouraged for all participants in a group discussion.	Established with a teacher-pupil dialogue.
Word Recognition Skills	Taught during or after the reading step. Selected by each pupil because of his needs.	Taught prior to the reading step. Selected from the author's prepared list.
Comprehension Skills	Taught by pupil's re-reading parts to accept, reject, or redefine their individually formulated purposes.	Taught by the teacher asking questions during silent or oral rereading steps.
Source of Authority	Material being read.	Teacher
Rate of Reading	Adjusted to the purposes for reading.	Not accounted for in the procedure.
Re-reading Orally	Used for reading specific parts to prove purposes.	Used to reread entire story with a prescribed set of questions.
Teacher's Role	Serves as a moderator and intellectual agitator.	Serves as moderator, questioner, and judge of the pupils' answers.

*Dr. Richard M. Petre, Quantity, Quality and Variety of Pupil Responses During an Open-Communication Structured Group Directed Reading-Thinking Activity and a Closed-Communication Structured Group Directed Reading Activity, unpublished doctoral dissertation (University of Delaware, July, [illegible]), p. 7.

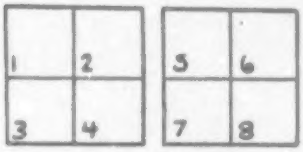
[illegible]

Adapted for inservice--Directed
Reading-Thinking Activity

Making Inferences

Children need many opportunities to draw inferences and to sharpen visual imagery.

Have each child fold a sheet of drawing paper in half, then open the paper and fold it in half again the other way. Have students number the resulting boxes 1 to 4, then turn the paper over and number the boxes 5 to 8. Any size paper can be used. A piece 9" x 12" is good.



Tell the group you are going to read a story. At various points you will stop and ask them to draw a picture based on given information. Each child will need to think about what he or she has heard to decide what to draw. Ideas here are more important than the art. A sketch will do. (Students should put down pencils when finished with each sketch so you will know all are finished with their pictures.)

Now read the following story, pausing where indicated. Or tape it. Then you can play it several times with different groups.

You have never met me, so I'm going to tell you all about me.

I am not very big, but I'm very active. I have a father and a mother. I have many sisters, brothers, cousins, aunts, and uncles.

Are you wondering what I look like? Use your imagination. Draw a picture of me in box one. (Pause)

After you have heard more of the story you may change your mind about the way I look.

I have a home. It is a most intriguing home. It is very cool and comfortable. My large family and I have plenty of—how do you say it? Oh, yes, elbow room. We have plenty of elbow room.

Do you know what my home looks like? Keep thinking.

Someday you, your mother, father, sisters, brothers, cousins, aunts, and uncles may come to visit me. There will be plenty of room for all of you. Why not bring the neighbors? Bring all your school friends, too.

I have heard that someday you and your friends may decide to live in my home. We will not be crowded. But be sure to bring your own oxygen.

Now do you know where I live? Be careful. Think about what you have heard. In box two draw a picture of my home. (Pause)

Did you make your best guess?

I like to play games. Tag is one of my favorite games. My favorite sport is swimming. It seems to me I've been swimming all my life.

In box three draw a picture of the way you think I look. (Pause)

What is your favorite game? What is your favorite sport?

I am sometimes in a school with other girls and boys. My school is quite different from yours. Most of the time we just swim and play tag. Would you like to be in a school like that?

In box four draw a picture of my school. (Pause)

Do you know me now? Think hard.

I like many kinds of food. In fact, I happen to know you eat one of the same foods. I eat it plain, but you eat it in ice cream. Do you know the name of the food we both like?

Write the name of the food in box five, and draw a picture of it. (Pause)

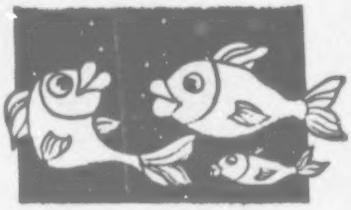
I'll tell you the name of the food. Its name is Kelp, K-e-l-p. Kelp is a green plant. It helps to make ice cream so-o-o smooth. Kelp grows at the bottom of the sea where I live. Have you changed your mind about the way I look?

Draw my picture in box six. (Pause)

Did you draw a picture of a fish? That's right. My name is Mark Edward, and I'm a fish.

In the last boxes draw a picture of me swimming and playing tag in my school. You may draw some kelp, too.

Now will you please write to me? Tell me all about you. And please send along some pictures, too.

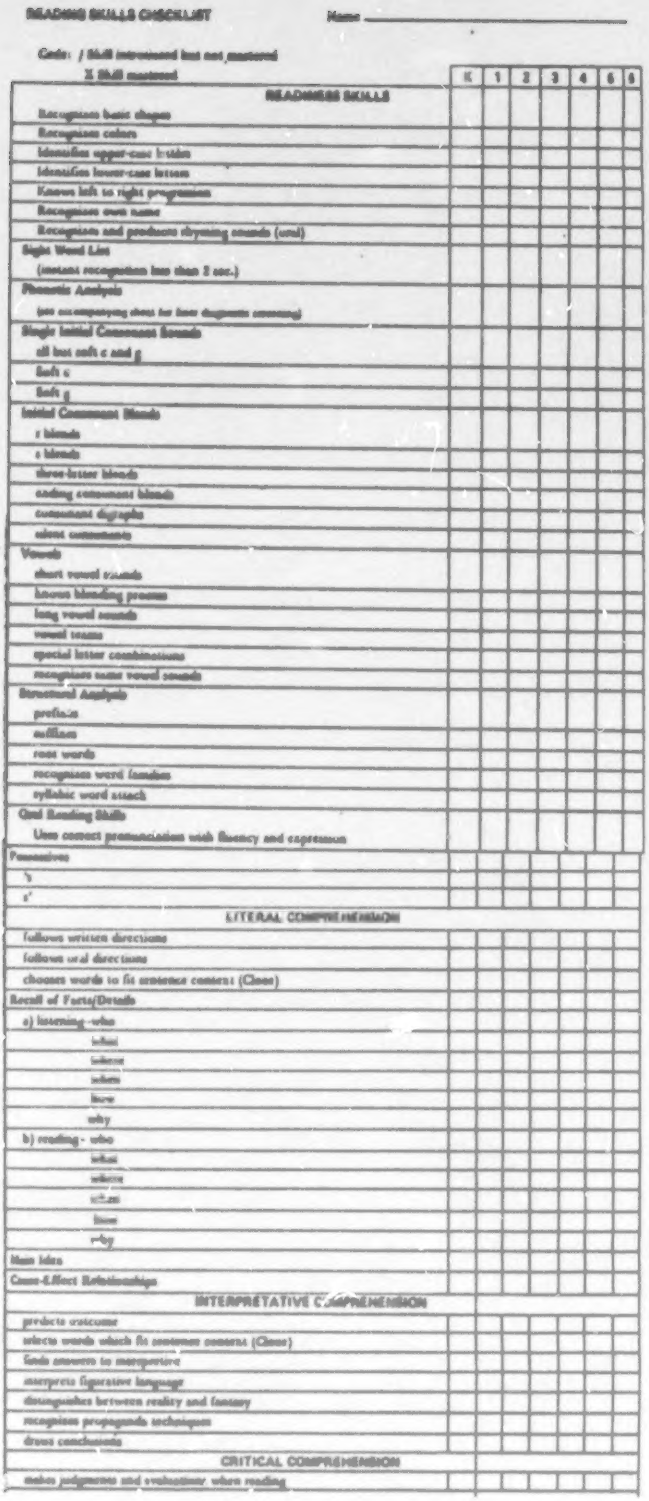


When all have finished their boxes, go back to the beginning of the story and let children discuss what they drew in box one. Almost anything could have been drawn except someone known to the student. Some will draw their teacher or friends. Replay the tape or reread the first part to show why it could not have been someone known by the student. It may take more than one rereading of that part for all to realize that it someone they have never met. (An elephant wouldn't be a very good guess here, either.)

Take careful note what the children draw in box two. Drawing a moon home shows making better use of given information than drawing a regular house. Discuss this. (About one-third of one fourth grade drew an underwater home in box two, one-third drew moon homes, and one-third drew regular homes.) Work through the entire story in this way. Much fun can be had with this exercise, and no student should be made to feel inadequate.

If you feel you have several children who will have real difficulty or are very reluctant about putting their own ideas on paper, divide the group into small heterognous groups (four or five in each group). They may discuss what should be drawn in their own group before drawing.

Instructor big Book: Reading Ideas



READING SKILLS CHECKLIST

Name ____________________

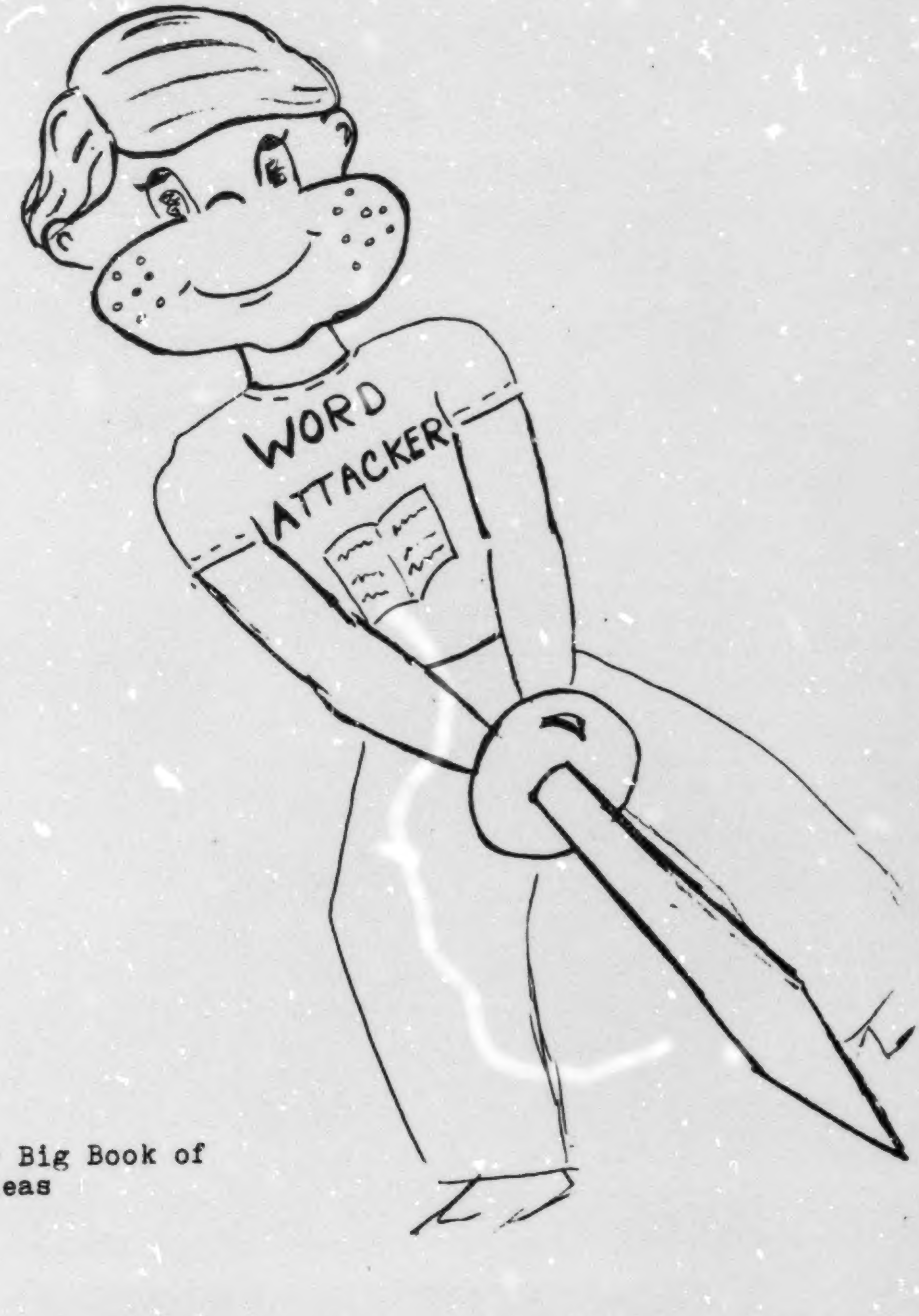
Code: / Skill introduced but not mastered
X Skill mastered

	K	1	2	3	4	5	6
READINESS SKILLS							
Recognizes basic shapes							
Recognizes colors							
Identifies upper-case letters							
Identifies lower-case letters							
Knows left to right progression							
Recognizes own name							
Recognizes and produces rhyming sounds (oral)							
Sight Word List (instant recognition less than 2 sec.)							
Phonetic Analysis (see accompanying sheet for finer diagnostic screening)							
Single Initial Consonant Sounds all but soft c and g							
Soft c							
Soft g							
Initial Consonant Blends r blends							
l blends							
three-letter blends							
ending consonant blends							
consonant digraphs							
silent consonants							
Vowels short vowel sounds							
knows blending process							
long vowel sounds							
vowel teams							
special letter combinations							
recognizes same vowel sounds							
Structural Analysis prefixes							
suffixes							
root words							
recognizes word families							
syllabic word attack							
Oral Reading Skills Uses correct pronunciation with fluency and expression							
Possessives							
's							
s'							
LITERAL COMPREHENSION							
follows written directions							
follows oral directions							
chooses words to fit sentence context (Cloze)							
Recall of Facts/Details							
a) listening - who							
what							
where							
when							
how							
why							
b) reading - who							
what							
where							
when							
how							
why							
Main Idea							
Cause-Effect Relationships							
INTERPRETATIVE COMPREHENSION							
predicts outcome							
selects words which fit sentence context (Cloze)							
finds answers to interpretive							
interprets figurative language							
distinguishes between reality and fantasy							
recognizes propaganda techniques							
draws conclusions							
CRITICAL COMPREHENSION							
makes judgements and evaluations when reading							

Instructor Big Book of Reading Ideas

"I attack words" Club.

Slogan: Either you beat the word or it beats you.


WORD ATTACKER

Instructor Big Book of
Reading Ideas

CONTEXT CLUES

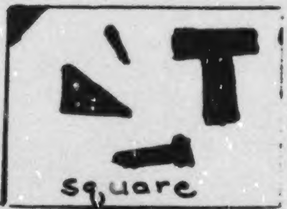
Definition or direct explanation
Synonym or restatement
Summary
Mood or reflection
Antonym
Familiar expression
  A penny saved is a penny earned.

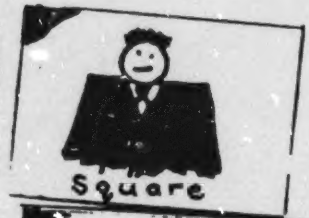
Background experiences

Examples:
  Mammals, for example cats, nurse their babies

I have an instrument for drawing right angles. It is a square.

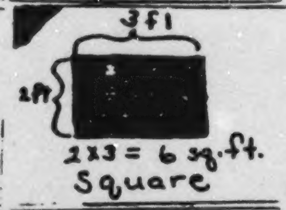
Mr. Jones won't let us play ball. He's ___.

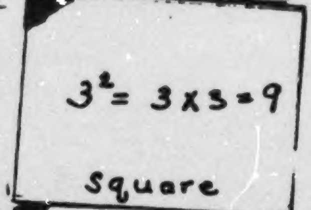




How much ___ area is a 2 foot by 3 foot box?

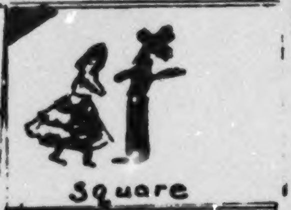
A number multiplied by itself is ___ ed.

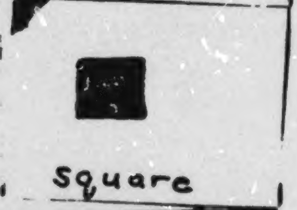

3 ft
2 ft
2×3 = 6 sq. ft.
Square


$3^2 = 3 \times 3 = 9$
Square

Let's do a ___ dance.

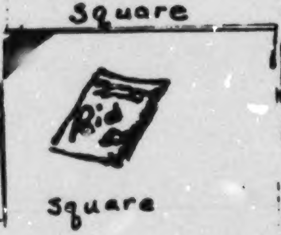
Draw a two inch ___

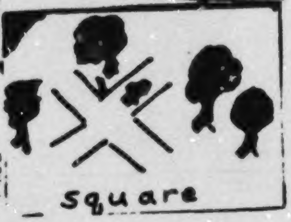




We are ___ now.

Meet me at the town ___.





Multiple meanings of vocabulary. Paste on tagboard. Paste tagboard on picture. Cut evenly. When put together in folder, can be flipped for self checking.

Name ______________________________ Page 1

1. What can you taste?
   a. a book
   b. a bell
   c. a cookie

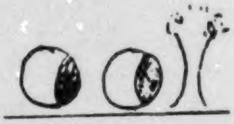
2. What makes a loud noise?
   a. a fan
   b. a train
   c. a fish

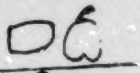
3. What can you smell?
   a. a hat
   b. perfume
   c. a butterfly

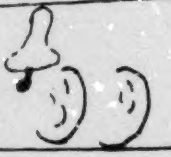
4. What feels soft?
   a. a pinecone
   b. a rock
   c. cotton

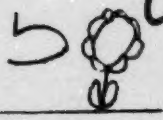
5. What can you see?
   a. air
   b. colors
   c. sounds

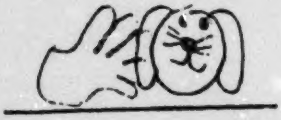
Name Donice

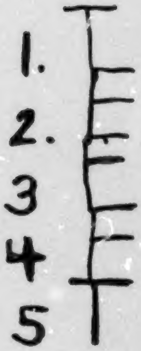
1 You use your  to see
a tree.

2 You use your  to taste
an apple.

3 You use your  to
hear a bell.

4 You use your S  cute! to ☆
smell a flower.

5 You use your  to
feel a puppy.



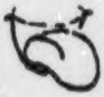
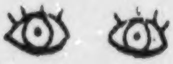
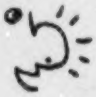
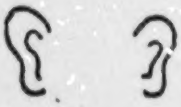
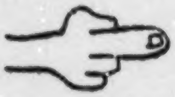
☆

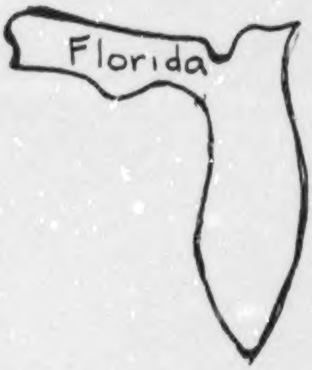
Teacher asked the following questions:
1. If a person had trouble reading a book, then he may need glasses.
2. If you smell bacon and eggs cooking, then it will soon be time to eat supper.
3. If you reached into a bag and felt something hard, round and smooth, it could be a mitten.
4. If Mary only likes to eat sweet things, then she would love to eat lemons.
5. If Bill couldn't hear a horn blow, then he should have his ears checked.

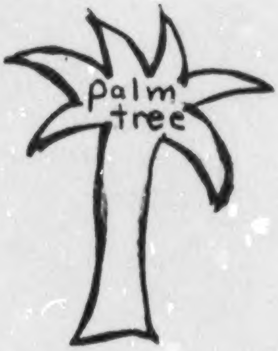
Taste Touch See Smell Hear

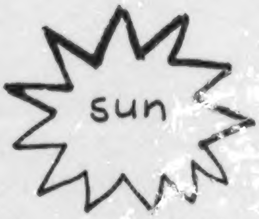
5 Senses

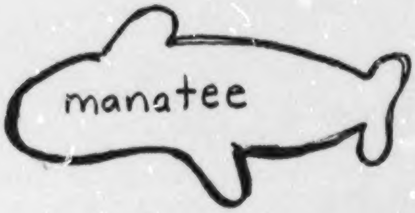
1. Color all ①'s red.
2. Color all ②'s blue.
3. Color all ③'s yellow.
4. Cut of out all pieces.
5. Match and Paste the 5 Senses.

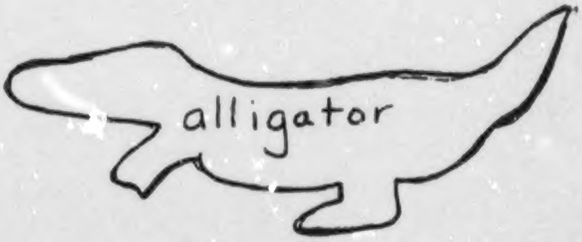
① see	② ears	③ 
① hear	② nose	③ 
① smell	② eyes	③ 
① taste	③ finger	② 
① touch	② tongue	③ 

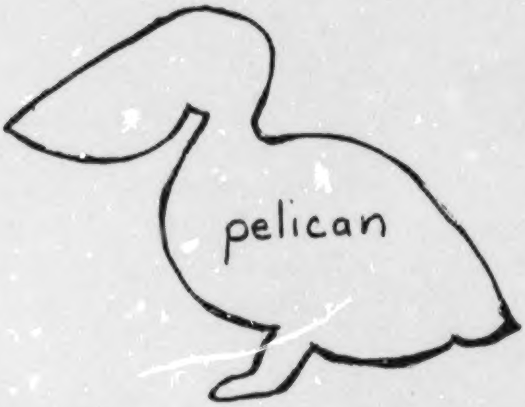






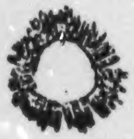


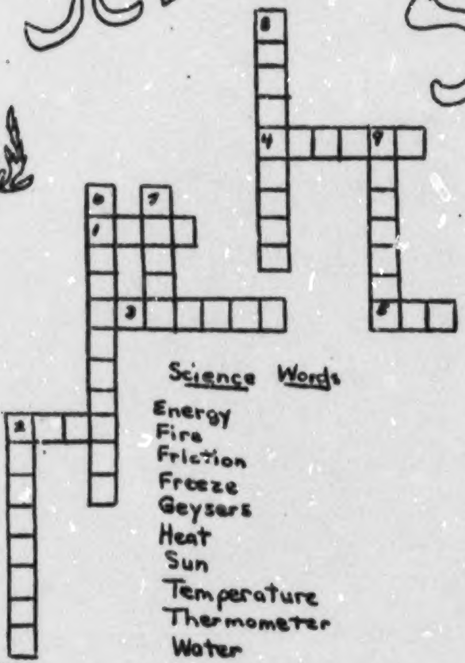




To teach vocabulary for a science lesson, the teacher cut large, brightly-colored shapes and labeled them with the words.

Science Search





Science Words

Energy
Fire
Friction
Freeze
Geysers
Heat
Sun
Temperature
Thermometer
Water

ACROSS:

1. A kind of energy.
2. This has enough heat energy to burn you.
3. This would happen to our world if we didn't have any heat.
4. This is what plants get from the sun.
5. This warms our world.

DOWN:

2. This produces heat energy.
6. This measures how hot or cold something is.
7. Heat energy can move through this.
8. A measure of how warm something is.
9. This is the result of what happens when water is heated underground.

Comprehensive Method

2nd Grade
March 6, 1984
Accent on Science

NAME_______________

DATE_______________

SCIENCE TEST
Chapter Six

Main Idea 1. What was this chapter about?

Detail 2. What was the chef's job?

Detail 3. How did the water in the geyser get hot?

Sequence 4. What happened before the hot water from the geyser shot up into the air?

Vocab. 5. What does the word temperature mean?

Sensory 6. Heat is one kind of energy. How does it feel to you?

Comparison & Contrast 7. A fire and a stove are alike in what way?

Drawing Conclusions 8. Thinking about what you learned, which of the following things would not cook food? Circle your answer.
(A) fire (B) stove (C) tea kettle (D) oven

Cause & effect 9. What happened when the thermometer was put in a glass of ice?

Critical Thinking 10. Which of the following things is really not true? Circle it.
(A) A chef can use heat energy from large ovens to cook food.

(B) Very hot rocks make water boil.

(C) Heat energy can not move through water.

Drawing Conclusions 11. What would happen to our world without heat?

Detail 12. What does the sun do for our world?

Comparison 13. How are toasters, heaters, and hair dryers alkie?

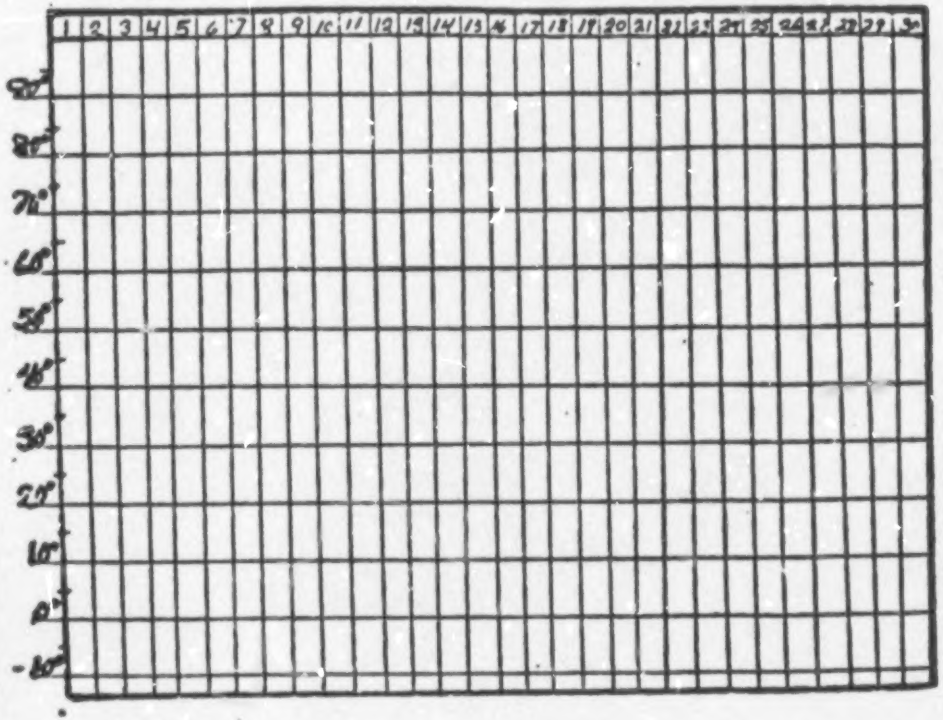
Detail 14. How do you use the heat energy of fire?

Detail 15. With what can you measure your temperature?

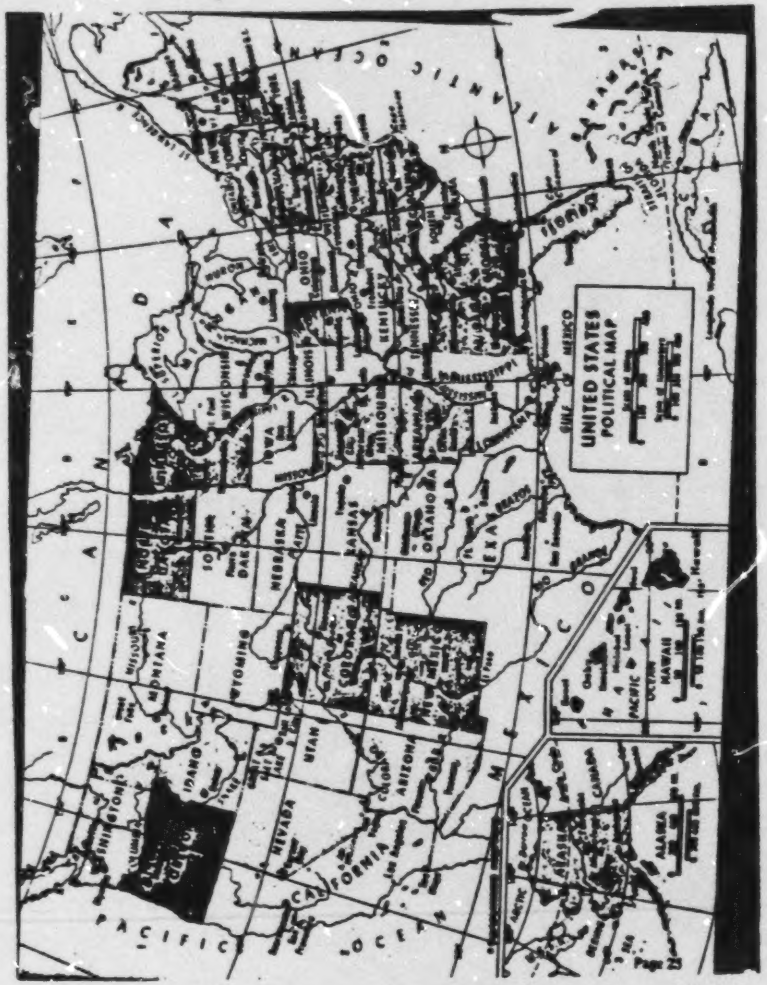
Temperatures

National high
Orlando high
Seattle high

Month of ______________



Every day.....
Check the temperatures in the paper.
Mark the high temperatures on the graph.
Do this for a month.


ATLANTIC OCEAN
PACIFIC OCEAN
CANADA
MEXICO
GULF OF MEXICO
UNITED STATES POLITICAL MAP
Page 23

United States

Use a washable magic marker. Underline the sentences that are true about your state.

My State

1. My state is west of the Mississippi River.

2. My state borders one of the Great Lakes.

3. My state is closer to the east coast than to the west coast.

4. My state is bordered by an ocean.

5. My state is west of our national capital.

6. Four states border my state.

7. One boundary of my state is an international boundary.

United States

Circle the word, or groups of words, that best completes each sentence. Use a washable marker.

Map Study

1. The United States is ____ North America.
bigger than   part of   far from

2. Planes flying from Iowa to Texas cross the __________ River.
Ohio   Missouri   Columbia

3. An ocean liner might dock at a __________ harbor.
Virginia   Kansas   Nevada

4. Boats traveling downstream on the Mississippi River reach the ____.
Pacific Ocean   Great Lakes
Gulf of Mexico

Task card # 10

Use a sewing needle, fork and a glass of water. Place the sewing needle on the fork. Slowly lower the fork beneath the surface of the water in the glass. If you do this gently enough, the needle will float on the surface of the water. Why?

Task card # 9

Collect different objects and a magnet. Try to pick up the objects with the magnet. What will it pick up? Why won't it pick up everything? Does it have anything to do with what the object is made of? Draw a picture (record) of your findings.

Task card # 12

Blow up a balloon. Will it stick to the wall? Try rubbing it against a piece of wool. Will it stick now? What changes have happened? Why does it now sticks?

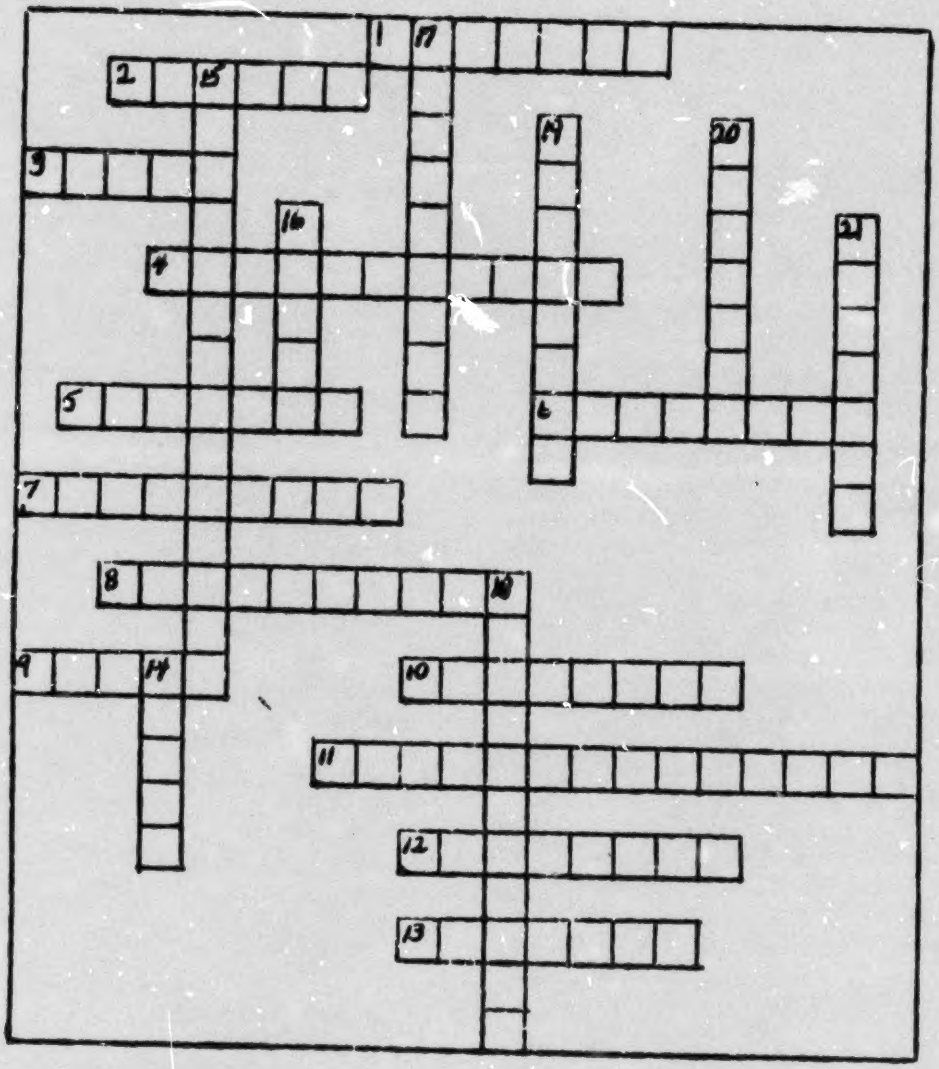
Task card # 11

Needed; 3 or 4 pairs of small things such as rocks, pieces of aluminum foil, and cups of water. Place one thing from each pair in the sunlight. Place the other things away from each pair in the shade. Keep all the things away from heaters. After about an hour, feel each pair of things. Which things are warmer— the ones in the sunlight or the ones in the shade? Why?

BEST COPY AVAILABLE

Digestion

Crossword Find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DIGESTION
Crossword Find Clues

ACROSS

1. a French scientist who found that gastric juice is present in the stomach of animals

2. a liquid that helps make food soft and easy to swallow; it also contains chemicals that help break down foods

3. large reddish-brown organ that makes bile which is secreted into the small intestine

4. action of food being pushed along by rings of muscles

5. juice secreted by glands in the stomach

6. undigested material that the body can't use

7. process of breaking down food into a form that the body can use

8. thin layer of cartilage that prevents food from going down the windpipe

9. food in the form of a thick liquid that is squeezed out of the stomach

10. an American surgeon who made important observations while watching a man's stomach at work

11. slender part of the intestines that extends fsom the stomach to the large intestine (about 20 feet in length)

12. gland near the stomach that empties secretions into small intestines to aid in digestion

13. saclike structure that stores and discharges the body's liquid waste

DOWN

14. slippery, protective covering of walls of the stomach

15. lower intestines into which the small intestines discharge food that is already digested

16. tiny, hairlike parts growing out of the lining of the small intestines which aid in the transfer of food into bloodstream

17. passageway for food extending from the mouth to the stomach

18. an Italian scientist who conducted digestion experiments on himself

19. glands that secrete saliva into the mouth

20. large, muscular bag which further digests food before passing it into intestines

21. pair of glands that separate wastes from the blood and passes them off through the bladder

SQ3R STUDY METHOD
Applied to Health and Growth
Unit 5 "How Does Your Body Digest Food?"
(pages 136-151)

SURVEYING AND QUESTIONING

Introduce unit to be read by discussing amounts of foods from the various food groups that students have eaten during the previous week. Lead them into questioning and speculating what happens to all the food they eat(title question- How Does Your Body Digest Food?).

Purpose and motivation for reading are set through questions about the main topics to be covered in the unit. Briefly, have the students commit themselves to answers for the following questions (as this should aid in holding their attention):

1. How have we learned about digestion?
2. What happens to food in the mouth? In the stomach? In the small intestine?
3. How does the body get rid of wastes?
4. What important things does food do for the body?

Proceed to explain that headings usually correspond to the main things the author wants us to learn.

Discuss the first major heading- "How Have We Learned About Digestion?" (pg. 136). Explain that years ago scientists didn't have all the books of information or modern equipment to help them learn about or see inside the body like we have today. Encourage students to think about and express how they might have gone about finding out about digestion in a scientific way.

Have the children note the three sub-headings of this section on pages 137-141. (Rene de Reaumur and His Pet Kite, Larazo Spallanzani and His Little Bags of Linen, and Dr. William Beaumont Watching a Stomach at Work) They should be encouraged to find out wat these men were curious about, how they experimented, and what conclusions each made.

Proceed to discuss the second major heading- "What Is the Complete Story of Digestion?" (pg. 142). Lead into discussion talking about modern medical inventions that have aided in greater knowledge of the digestion process (x-rays, electron microscope, color camera, etc.)

Point out that we can follow the path food follows through the digestive process by looking at the author's sub-headings on pages 142-148. (Digestion Starts in the Mouth, What Happens in the Stomach, what happens in the

Small Intestine, What Happens in the Large Intestine, Factors That Affect Digestion, and Getting Rid of Liquid Body Wastes) Children should be encouraged to find out what specifically happens to food in each of these areas.

As the steps of surveying and questioning are in the process of being done, attention should also be given to important vocabulary words (in italics or bold type) in the reading selection at the same time.

These words could be listed beforehand on the board and specific attention given to them at some point before actual reading begins.

Children should be encouraged to find definitions for these words in the context. For example, digestion is defined in context (pg. 142) as follows: "The process of breaking down food into a form that the body can use is called digestion." Children could also be encouraged to use the glossary to find the word meanings.

Illustrations also should be pointed out and discussed as you are introducing the unit. Illustrations are found on nearly every page. They are most informative and enhance interest in the study of digestion greatly in this unit.

The author has not stated a summary but recommends that the questions on pg. 174 (Check Yourself) be used as a guide for a group summary discussion. It might be helpful to preview these questions also before the actual reading of the unit begins. This again aids in giving students a purpose for reading. They are exposed to examples of what knowledge they are to gain in their reading.

READING, RECITING, AND REVIEWING

Hopefully, the interest aroused and the questions posed during the Surveying-Questioning time will help the students concentrate as they now proceed to read the material. (stress answering questions, noting vocabulary terms and reading everything on the page)

It is imperative that children also to directed to summarize (pick out main ideas) after reading each paragraph and/or short section of the unit.

Finally, students should be urged to review the material covered. This can be done in numerous ways. The following might be good examples:

1. Encourage children to read again the sections they had difficulty understanding.
2. Encourage them to look again at the headings and sub-headings and to summarize the main ideas in each section.
3. The text has made available summary questions on pg. 174 that could be used as an oral or written review exercise.
* 4. Prepared study guides are useful to make sure important ideas are sought out. (See attached study guide example)
* 5. Games or puzzles provide fun ways to review read material. (See attached "Digestion Cross-word Find"

Health Unit 5
Part A (pgs. [illegible])

"How Have We Learned About Digestion?"

Rene de Reaumur and His Pet Kite

1. What problem did Reaumur want to solve?

2. Explain Reaumur's experiment involving his bird.

3. Why did he repeat his experiment many times?

4. What did Reaumur name the stomach juice that he found out about?

5. What conclusion did he come up with as a result of all his experimenting?

Lazaro Spallanzani and His Little Bags of Linen

1. Spallanzani wondered if the human stomach worked in the same way that the stomachs of animals did. Explain his experiments.

2. Why do you think Spallanzani used his own stomach for experimenting?

3. Tell how the experiments of Spallanzani were like those of Reaumur. Also, tell how they were different.

Dr. William Beaumont Watches a Stomach at Work

1. Where and when did Dr. Beaumont's experiments begin?

2. Who was Dr. Beaumont called upon to take care of?

3. Tell about Dr. Beaumont's unusual opportunity to experiment with the stomach.

4. Beaumont discovered many important things about the stomach. Explain what he learned about the following:

   A. Time needed to digest food

   B. Work of teeth and saliva

   C. Our emotions

   D. Exercising

   E. Alcohol

5. How do you think alochol might affect the stomach of a person that is a heavy user of it?

6. Do you think Alexis St. Martin was very comfortable in the years following his accident? Explain.

What would you have done if you were in Alexis St. Martin's place?

Study Guide
Health Unit 5
Part B (pgs. [illegible])

"What Is the Complete Story of Digestion?"

Digestion Starts in the Mouth

1. Why must food be broken down into tiny particles?

2. What is the process of breaking down food into a form that the body can use called?

3. When does digestion start?

4. Where does saliva come from?

5. Name two things that saliva does to help in the digestion of food.

6. What is another name for the food tube?

7. The body has many ways of protecting itself. Explain how food is kept from going into the nose or down the windpipe.

8. Can you swallow food standing on your head? Explain why or why not.

What Happens in the Stomach

1. Where does gastric juice come from?

2. Explain why gastric juice is important in the digestion process.

3. Why doesn't gastric juice dissolve the walls of the stomach?

4. Which foods stay in the stomach the longest?

5. What is chyme?

What Happens in the Small Intestine

1. About how long is the small intestine?

2. What role do the liver and pancreas play in digestion?

3. Where is digestion completed?

4. What amazing thing does the dissolved food do in the small intestine?

5. Explain how the tiny, fingerlike parts called villi work.

What Happens in the Large Intestine

1. Where does material that can't be digested go?

2. What important work does the large intestine do?

3. What material passes through the walls of the large intestine?

4. What is roughage?

Factors That Affect Digestion

1. Why is it a good idea to try to learn to control your feelings or emotions?

Getting Rid of Liquid Body Wastes

1. Explain how your kidneys function.

2. What happens to liquid waste material that is not reabsorbed in the kidneys?

3. Do you think you could live without one of your kidneys? Without both? Explain your answers.